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MEMOIRS

READ BEFORE THE

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1863-4.

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MEMOIRS

READ BEFORE THE

ANTHROPOLOGICAL SOCIETY OF LONDON.

I.—*On the Negro's Place in Nature.** By JAMES HUNT, PH.D., F.S.A., F.R.S.L., F.A.S.L., Foreign Associate of the Anthropological Society of Paris, Honorary Fellow of the Ethnological Society of London, Corresponding Member of the Upper Hesse Society for Natural and Medical Science, etc., etc., and President of the Anthropological Society of London.

I PROPOSE in this communication to discuss the physical and mental characters of the Negro, with a view of determining not only his position in animated nature, but also the station to be assigned to him in the genus *homo*. I shall necessarily have to go over a wide field, and cannot hope to treat the subject in an exhaustive manner. I shall be amply satisfied if I succeed in directing the attention of my scientific friends to a study of this most important and hitherto nearly neglected branch of the great science of Anthropology.

It is not a little remarkable that the subject I propose to bring before you this evening is one which has never been discussed before a scientific audience in this Metropolis. In France, in America, and in Germany, the physical and mental characters of the Negro have been frequently discussed, and England alone has neglected to pay that attention to the question which its importance demands. I shall, therefore, make no apology for bringing this subject in its entirety under your consideration, although I should have preferred discussing each point in detail. I hope, however, this evening to bring before you facts and opinions that will lay a good foundation for future inquiry and discussion. Although I shall

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* Read Nov. 17, 1863.

dwell chiefly on the physical, mental, and moral characters of the Negro, I shall, at the same time, not hesitate to make such practical deductions as appear to be warranted from the facts we now have at hand, and trust that a fair and open discussion of this subject may eventually be the means of removing much of the misconception which appears to prevail on this subject both in the minds of the public, and too frequently in the minds of scientific men. While, however, I shall honestly and without reservation state the conclusions at which I have arrived, I shall at the same time listen with deep attention and respect to those who differ from me, and who support their opinions by facts, by the opinions of some travellers, or by their own observations. Heretofore, however, it has happened that much human passion has been introduced, not only into public discussions, but especially into the literature on this subject. Even such a generally fair and philosophic writer as Professor Waitz has accused men of science with promulgating views which are practically in favour of the so-called "slavery" of the Confederate States of America. Many other scientific men could be named who have equally been guilty of imputing such unfair and uncharitable motives. While, on the other hand, writers thus accused retort by applying to their opponents all sorts of epithets. One author, for instance, exclaims: "How I loathe that hypocrisy which claims the same mental, moral, and physical equality for the Negro which the whites possess."* No good can come of discussion conducted in such a spirit. If we wish to discover what is the truth, we must give each other credit for honesty, and not impute base or interested motives.

In the first place, I would explain that I understand by Negro, the dark, woolly-headed African found in the neighbourhood of the Congo river. Africa contains, like every other continent, a large number of different races, and these have become very much mixed. These races may be estimated as a whole at about 150 millions, occupying a territory of between 13 and 14 millions of square miles. I shall not enter into any disquisition as to the great diversity of physical conformation

* *Negro Mania*: being an examination of the falsely assumed equality of the various races of man; by John Campbell, Philadelphia, 1851, p. 11.

that is found in different races, but shall simply say that my remarks will be confined to the typical woolly-headed Negro. Not only is there a large amount of mixed blood in Africa, but there are also apparently races of very different physical characters, and in as far as they approach the typical Negro, so far will my remarks apply to them. But I shall exclude entirely from consideration all those who have European, Asiatic, Moorish or Berber blood in their veins.

My object is to attempt to determine the position which one well-defined race occupies in the genus homo, and the relation or analogy which the negro race bears to animated nature generally. We have recently heard discussions respecting Man's place in nature: but it seems to me that we err in grouping all the different races of Man under one generic name, and then compare them with the anthropoid Apes. If we wish to make any advance in discussing such a subject, we must not speak of man generally, but must select one race or species, and draw our comparison in this manner. I shall adopt this plan in comparing the Negro with the European, as represented by the German, Frenchman, or Englishman. Our object is not to support some foregone conclusion, but to endeavour to ascertain what is the truth, by a careful and conscientious examination and discussion of the facts before us. In any conclusion I may draw respecting the Negro's character, no decided opinion will be implied as to the vexed question of man's origin. If the negro could be proved to be a distinct species from the European, it would not follow that they had not the same origin—it would only render their identity of origin less likely. I shall, also, have to dwell much on the analogies existing between the Negro and the Anthropoid Apes; but these analogies do not necessarily involve relationship. The Negro race, in some of its characters, is the lowest of existing races, while in others it approaches the highest type of European: and this is the case with other savage races. We find the same thing in the Anthropoid Apes, where some species resemble man in one character, and some in another.

The father of English Ethnology, Dr. Prichard, thought that the original pair must have been Negroes, and that mankind

descended from them. His words are:*—"It must be concluded that the process of nature in the human species is the transmutation of the characters of the Negro into those of the European, or the evolution of white varieties in black races of men. We have seen that there are causes existing which are capable of producing such an alteration, but we have no facts which induce us to suppose that the reverse of this change could in any circumstance be effected. This leads us to the inference that the primitive stock of men were Negroes, which has every appearance of truth." It is not a little remarkable that although Blumenbach and Prichard were both advocates for the unity of man, they materially differed in their argumentation. Blumenbach saw, in his five varieties of man, nothing but degeneracy from some ideal perfect type. Prichard, on the contrary, asserted he could imagine no arguments, or knew of no facts, to support such a conclusion. Prichard, however, was not alone in this supposition; for Pallas,† Lacépède,‡ Hunter,§ Doornik,‖ and Link,¶ were also inclined to the same view. We must not dwell on such speculations; for on the present occasion we shall not touch on the origin of man: it will be enough if we assist in removing some of the misconceptions regarding the Negro-race existing in the minds of some men of science. It is too generally taught that the Negro only differs from the European in the colour of his skin and the peculiarity of his hair. The skin and hair are, however, by no means the only characters which distinguish the Negro from the European, even physically; whilst the mental and moral difference is still greater than the demon-

* *Researches into the Physical History of Mankind*, 1813, p. 233.

† *Travels through the Southern Provinces of the Russian Empire, in* 1793-4.

‡ *Vue Générale*, etc. Paris, 1822.

§ *Disputatio inauguralis de Hominum Varietatibus et earum causis exponens*, etc. Joannes Hunter. Edinburgh, 1775.

‖ *Wysgeerig-natuurkunding Onderzoek*, etc. Amst., 1808.

¶ On this point Link (*Die Urwelt*, etc., Berlin, 1821-2) says:—"Soemmering's investigations (Die Körperliche Verschiedenheit des Negers, Frankfurt, 1785,) show how much more the Negro in his internal structure resembles the Ape than the European. The latest productions of the animal world were mammals, and it stands to reason that the most recent race should be that which is the most remote from the other mammals, and that race should be the oldest which approaches them most, namely, the Negro. Colour, also, confirms this everywhere, when we observe white and black animals of the same species. The latter always form the original stock, the former the deviation."

strated physical difference. In the first place, what are the physical distinctions between the Negro and the European?

The average height of the Negro* is less than that of the

* "The stature of the Negro approaches the middle size. The tribes above the middle stature are probably more numerous than those below it. I know of no instances of dwarfism among Negroes, though the monuments of Egypt show that there were dwarfs among the Negroes at a very remote epoch. Nevertheless, giants and dwarfs occupy a certain place in the ideas and stories of the Negro, as well as tailed men. We know what to believe as regards the latter point. With respect to dwarfs, the Bosjesmen seem to answer the ideas of the Negroes, for they play in their stories the same part as the Hyperboreans in the traditions of ancient Greece. Obesity is exceptionally found in males of high rank, and more frequently in the women. The disposition to grow fat is less rare among the short than among the tall Negroes. The taller are frequently lank and very angular.

"On examining the physiognomy of the Negro, I would first observe that the palpebral fissure is narrow and horizontal; but the aperture of the nostrils presents instead of a raised triangle a tranverse ellipsis; that the point of the nose is obtuse, round, and thick; that the ear is small, detached from the head, with a lobule little separated. To this must be added the cheeks stuffed by the masseters, the conformation of the jaws and lips, and the ensemble of the physiognomy of the Negro presents a singular mixture. The inferior part reflects sensuality, not to say more; above the mouth we might say it is the face of a new-born child enlarged. The absence of expression in the features produces the effect of an unfinished work. The change of colour, so significant in the white man, that mute language, but more effective than the spoken word which moves us, is almost entirely absent in our African brothers. The black veil which covers the whole, even withdraws the play of the muscles from the eye of the observer, unless it be in moments of passionate agitation.

"The eye alone enables us to judge what passes in the depth of the mind. This mirror is sufficiently bright to enable us to distinguish two classes, which may be compared to the choleric and phlegmatic temperaments. The travellers who have observed the Negro in his native country indicate some expressive, and, so to say, national shades, which distinguish the peoples of the Sudan. This is in harmony with the differences in features, stature, we shall speak of in the sequel. We find thus among the authors the terms, "dignified and proud, jovial and gay, intelligent and cunning;" also, "insignificant and inexpressive, melancholy and morose, dull and stupid." Thus the Negro participates also in this respect largely of the nature of man in general; but it cannot be said of him what was applied to the American, "Gentleness hovers on his lips, and ferocity gushes from his eyes."

"The neck of the Negro is generally short; it is scarcely 8 to 9 centimetres, excepting very tall subjects, when it attains 10 centimetres; the prominence of the larynx is rounded; the shoulders are less powerful than in the Turanian or Aryan. The Negro prefers carrying his burden on the head. The Negro is shrunk in the flank, the abdomen frequently relaxed; the umbilicus, situated nearer the pubis than in the European, is slightly prominent.

"After these short remarks on the conformation of the trunk, we must fix our attention on the limbs. We have already indicated the proportion of the parts which compose them. It now remains to describe their particular form. The arm and the forearm of the Negro present neither the muscular contours of the European nor the rounded shape of the American. The palm of the hand, as well as the sole of the foot, are always of a bistre colour. The palm is narrow and flattened; that is to say, the thenar and hypothenar eminences, as well as the tactile cushions, are little developed. The folds of the palm are very simple and rudimentary. The fingers are elongated; of little thickness at the ends; the nails are flat, bistre coloured, and rather widened at the end.

European, and although there are occasionally exceptions, the skeleton of the Negro is generally heavier, and the bones larger and thicker in proportion to the muscles than those of the European. The bones are also whiter, from the greater abundance of calcareous salts. The thorax is generally laterally compressed, and, in thin individuals, presents a cylindrical form, and is smaller in proportion to the extremities. The extremities of the Negro differ from other races more by proportion than by form: the arm usually reaches below the middle of the femur. The leg is on the whole longer, but is made to look short on account of the ankle being only between 1⅓in. to 1½in. above the ground; this character is often seen in mulattoes. The foot is flat, and the heel is both flat and long. Burmeister has pointed out the

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"In the inferior limb we observe the fold of the buttocks less rounded, the thighs more angular in front and specially at the back; the knees approximated; the calf usually weak, short, and laterally compressed; the feet spread out; the heel wide and prominent; the lateral borders of the feet straight, their anterior portion widened; the great toes short and small. The foot is rarely highly arched; on the other hand it is elongated, and what it wants in height is made up by the tibia, which is longer in proportion.

"This conformation of the foot of the Negro has induced a learned naturalist to take the foot as the starting point to fix the type of races. But the particulars given by M. Simonot, on the diversities met with in this respect among the peoples of the Senegal, which accord with the reports of other travellers and my own observations, throw doubt upon the constancy of the conformation. On the other hand, it is certain that the type of the inferior limb, as I have described it, is the appanage of the majority of Negroes. The flat foot is, however, also met with in a large number of races approaching more the Aryan than the Negro; for instance, in some tribes of America and Polynesia. It is also frequent in Russia, and it frequently influences the reform of the military service in the rest of Europe. The shortening of the great toe, combined with a slight distance from the rest, has been noted in the Negro, in some races of Malaisia, and the Hottentot as a constant character approaching these peoples to the ape. The importance of the great toe is incontestable, for it is the first bone which disappears from the extremities on descending the animal series. I think it therefore necessary well to examine this point as regards the Negro. Now it is true that the great toe in the Negro rarely rises above the second, but neither is it often shorter. This applies also to the pretended lateral distance which may moreover be owing to the employment of thongs in their shoes, as done by the Arabs, for instance. It is clear that all that has been asserted relative to the opposition of the great toe of the Negro is reduced to the simple question: Is there a muscle, or at least an aponeurotic tendon, subservient to this pretended use? Nowhere, and never has anything like it been discovered in the human genus. But a slight shortening of the great toe undoubtedly exists, not merely among the Negro tribes, but also in ancient and modern Egyptians, and even in some of the most beautiful types of Caucasian females I have seen. This character is not merely constant in the ancient Egyptian statues, it is also seen where art has fixed the characters of the ideal man, namely, in the sculptures of Greece. I am, however, as far from wishing to establish the identity of the foot of the Negro with that ideal type, as I am to class the inhabitants of Alsace among the Negroes, because many of them present the same peculiarity. (Pruner Bey. Memoire sur les Nègres, 1861.)

resemblance of the foot and the position of the toes of the Negro to those of the ape. The toes are small, the first separated from the second by a free space.* Many observers have noticed the fact that the Negro frequently uses the great toe as a thumb. The knees are rather bent, the calves are little developed and the upper part of the thigh rather thin. The upper thigh-bone of the Negro has not so decided a resemblance to that of the ape as that of the bushman.† He rarely stands quite upright, his short neck and large development of the cervical muscles give great strength to the neck. The shoulders, arms,

* "In most of the Africans the heel projects. From the skin of their feet being often of a horny hardness, sandals appear to me much better adapted than the shoe, as it allows of greater flexibility and movement. Lawrence in his 'Lectures on Man' says, that the calves of the leg in the Negro race are very high, so as to encroach upon the hams. His observation I can fully corroborate, as well as Dr. Winterbottom's remark respecting the largeness of the feet, and the thinness and flexibility of the fingers and toes."—*Sierra Leone*, by Robert Clarke, p. 49. Mr. Louis Fraser also says, "He will pick up the most minute object with his toes; his 'great' toe is particularly flexible."

† "It is quite certain that the ape which most nearly approaches man, in the totality of its organisation, is either the chimpanzee or the gorilla; and as it makes no practical difference, for the purposes of my present argument which is selected for comparison, on the one hand, with man, and on the other hand, with the rest of the primates, I shall select the latter (so far as its organisation is known) as a brute now so celebrated in prose and verse, that all must have heard of him, and have formed some conception of his appearance. I shall take up as many of the most important points of difference between man and this remarkable creature, as the space at my disposal will allow me to discuss, and the necessities of the argument demand; and I shall inquire into the value and magnitude of these differences, when placed side by side with those which separate the gorilla from other animals of the same order. In the general proportions of the body and limbs there is a remarkable difference between the gorilla and man, which at once strikes the eye. The gorilla's brain-case is smaller, its trunk larger, its lower limbs shorter, its upper limbs longer in proportion than those of man. I find that the vertebral column of a full-grown gorilla, in the Museum of the Royal College of Surgeons, measures 27 inches along its anterior curvature, from the upper edge of the atlas or first vertebra of the neck to the lower extremity of the sacrum; that the arm, without the hand, is 31½ inches long; that the leg, without the foot, is 26½ inches long; that the hand is 9¾ inches long; the foot 11½ inches long. In other words, taking the length of the spinal column as 100, the arm equals 115, the leg 96, the hand 36, and the foot 41. In the skeleton of a male Bosjesman, in the same collection, the proportions, by the same measurement, to the spinal column taken as 100, are—the arm 78, the leg 110, the hand 26, and the foot 32. In a woman of the same race the arm 83, and the leg 120, the hand and foot remaining the same. In a European skeleton I find the arm to be 80, the leg 117, the hand 26, the foot 35. Thus the leg is not so different as it looks at first sight, in its proportions to the spine in the gorilla and in the man, being very slightly shorter than the spine in the former, and between one-tenth and one-fifth longer than the spine in the latter. The foot is longer and the hand much longer in the gorilla; but the great difference is caused by the arms, which are very much longer than the spine in the gorilla, very much shorter than the spine in the man."—*Evidence as to Man's Place in Nature*, by T. H. Huxley, 1863, p. 70.

and legs are all weak in comparison to the corresponding limbs in the European. The hand is always relatively larger than in the European: the palm is flat, the thumb narrow, long, and very weak.

Dr. Pruner Bey has published the subjoined measurements* of the isolated bones in Europeans and Negroes. From Dr. Broca's careful investigations, it results that the radius is decidedly longer in Negroes than in Europeans in proportion to the length of the humerus.† The proportion of the radius to the humerus, taken at 100, being in the Negro 79.40, and in the European 73.93.

The great distinguishing characters of the Negro are the following: the forehead is flat, low, and laterally compressed. The nose and whole face is flattened, and the Negro thus has a facial angle generally between 70-75 degs., occasionally only 65 degs. The nasal cavities and the orbits are spacious.‡ The skull is very

* M. Pruner gives the following measures of the bones of the limbs in centimeters.

Designation of Measures.	Mean Measures.				Individual Measures.					
	Negroes.		Europeans.		Negroes.		Europeans.			
	Males.	Females.	Males	Females.	Man.	Woman.	Man.	Woman.	New-born Infant	Child 5 yrs. old.
Total height of Skeleton....	160·04	148·66	172·23	164·42	160·0	156·0	160·0	157·0	42·25	101·0
Femur	44·72	42 50	47·00	44·00	43·0	41·5	45 0	42·0	6·7	25 0
Tibia.....	38·09	35·33	38 76	37·71	39·0	38·5	36 0	36·0	6·0	22 0
Length of foot	24·50	21·83	25·00	23 57	23·5	21·5	24·0	23 0	„	„
Humerus.....	31·27	29·50	33·72	34·57	31·5	31·0	34·0	31·0	6·2	18·0
Radius	24·63	23·00	25·46	24·85	24·5	25 0	27·0	21·0	5·75	13·0
Length of hand.....	18·54	17·00	18·84	18·14	19·0	18·0	20·0	17·0	„	„

N.B.—"The preceding measures having been taken on skeletons, are only strictly correct as regards the isolated bones: femur, tibia, humerus, and radius. The lengths of hand and foot, and the total height of the skeleton, can only be approximative, as they are more or less modified by the mounters of the skeletons.

"By the side of the mean measures I have placed six individual measurements, viz.: a Negro and European of the same stature, and a European female and a Negress of the same height; and also a new-born European infant and a European child five years old. I wished to add a European child from thirteen to fifteen years old. It is at that age, according to M. Carus, that our children most approach the Negro by the relative dimensions of their extremities.

"The skeletons of the European females, which served for measurement, are in the gallery of the museum, having been placed at my disposal by the kindness of M. Quatrefages. Nearly all of them are those of females above the middle height."

† *Bull de la Soc. Anthro.*, iii., p. 162.

‡ *Facial cranium.*—"Before considering the anatomical details of the facial cranium, it is indispensable to note the disproportion existing between the size of the face and the cerebral cranium. This character, already indicated

hard and unusually thick, enabling the Negroes to fight with, or carry heavy weights, on their heads. The coronal region

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by Cuvier, depends chiefly on the excessive development of the jaws and the size of the cavities of the organs of sense. The orbits are large, funnel-shaped, with obtuse angles; their inferior margin is thick, round, more advancing than the superior margin; the inferior is flattened; the depression lodging the lachrymal gland is very deep. The lachrymal canal is large, and almost exclusively formed by the nasal apophysis of the maxillary. The bones of the nose are short, narrow but quadrangular, very rarely triangular, and exceptionally soldered together, always joined at obtuse angles; they are sometimes on the same plane. The nasal aperture is large, of an irregular triangular form, wide, without a spine, or only the rudiment of one. The root of the depressed nose is only exceptionally in a right line with the forehead; the width of the root of the nose increases the distance between the eyes a little more in the Aryan, but less than in the Turanian race. Sometimes the nose of the Negro resembles, by its round aperture, that of the Hottentot. The cornets, especially the middle, are swelled out; the vertical lamina of the ethmoid is spread out, and the vomer stands out.

"The malar bones are neither large nor high, but are either embossed in the centre of their external surface, or distorted outwards by their inferior border. The superior jaw presents frequently in its malar apophysis a vertical pit; then the cheekbones form an angle, and their prominence appears great. When, on the contrary, the apophysis is flattened, and the inferior border of the malar is much advanced, this character, joined with the narrowness of the forehead, gives to the face a form approaching the pyramidal shape. The prominence of the external orbital apophyses of the coronal, the projection of the malar bones, and the antero-posterior direction of their frontal apophyses produce a malar angle less open than in the Aryan race; whilst, on the contrary, the lateral compression of the anterior lobe of the brain is marked by rather a right angle formed by the external wall of the orbit with the temple. The ascending apophyses of the maxillary have their internal border more or less curved according to the shape of the nose.

"Prognathism, that is to say, the inclination of the alveolar border of the superior jaw downwards and forwards from behind constitutes one of the most constant characters in the skeleton of the Negro. Three degrees are distinguished:—

"(1.) The alveolar arch, elliptic instead of parabolic, generally convex throughout, rarely concave at its external part, is alone inclined, and the teeth are vertical.

"(2.) The direction of the teeth is that of the jaw. In these two cases the superior incisors pass a little beyond the superior dental arch.

"(3.) The highest degree, which may be called double prognathism, presents itself when the inferior incisors are, like the superior, projected obliquely; then the junction of the two rows of incisors form the angle of a chisel. This latter form is not the most frequent. But in double prognathism, cases have been observed where, by a slight shortening of the horizontal rami of the inferior maxillary, the superior incisors presented upon their posterior surface triangular facettes produced by the points of the inferior incisors.

"The molar teeth of the superior jaw descend sometimes lower than the incisors, or are at least at a level with them, but rarely do the molars in the Negro participate in prognathism, as is the case with some Australians, or Oceanic Negroes. Never is, to my knowledge, the prognathism of the Negro confined to a simple inclination of the alveoli. I have only remarked this disposition in some female crania of the Aryan race of India.

"The palatine arch, and especially the alveolar apophyses are not merely much elongated, but more enlarged in the Negro than among the Aryans. This arch is, on the average, about sixty-five millimeters in length in the Negro, and only fifty-eight in the Aryan.

is arched, but not so much developed as in the European woman. The posterior portion of the skull is increased, in proportion to that of the anterior part being diminished. But M. Gratiolet has shown that the unequal development of the anterior lobes is not the sole cause of the psychological inequalities of human races. The same scientific observer has also stated that in the superior, or frontal races, the cranial sutures close much later than in the inferior or occipital races. The frontal races he considers superior not simply from the form of the skull, but because they have an absolutely more voluminous brain. The frontal cavity being much larger than the occipital, a great loss of space is caused by the depression of the anterior region, which is not compensated for by the increase of the occipital region. From these researches it appears that in the Negro the growth of the brain is sooner arrested than in the European. This premature union of the bones of the skull may give a clue to much of the mental inferiority which is seen in the Negro race. There can be no

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"The inferior jaw, always more or less massive, is distinguished by a chin, retracted, generally large and rounded, rarely pointed, and by the thickness and length of its external rami. Its ascending rami are large, short, and their junction with the horizontal are rarely at right angles. The coronoid apophyses are always large, with an elliptic surface, flattened or oblique on its external half. The glenoid cavities are large and mostly of little depth. The teeth of the Negro are long, large, strikingly white, and not easily used up. The inferior molars sometimes present five tubercles, an anomaly which is sporadically found in all races of mankind. The jaw of the Negro never presented to me any trace of an intermaxillary bone (I owe to M. E. Rousseau's kindness the firm conviction of the non-existence of the intermaxillary bone in man in the normal state. His treatise places this important fact, now for ever acquired by anatomical science, beyond any doubt), though the incisive suture may be perfectly distinguished in the adult Negro at a period when the cranial sutures are mostly obliterated.

"The consistence of the cranial bones of the Negro is always considerable; but their thickness varies much, chiefly according to the volume of the cranium. Placed by the side of the Oceanian Negro, for instance, the cranium of the African would in this, as well as other respects, produce the impression of belonging to a civilised man, opposed to that of a savage, if this term be applicable to a man who, more or less, lives in a state of nature.

"Before quitting the examination of the cranium, I cannot pass over the facial angle of the Negro. It naturally varies, as in the other races, according to the greater or lesser inclination of the face, according to the development of the frontal sinuses; and, as regards the conformation of the face, it sinks, though rarely to 70°. But, on the other hand, the frontal angle of the Negro reaches to 80°. We, however, attach but a relative value to these two angles, for though the median line of the forehead is rather vertical in the Negro, the cranium is faulty, as regards the forehead, by an evident lateral contraction." (Pruner-Bey).

doubt that at puberty a great change takes place in relation to psychical development; and in the Negro there appears to be an arrested development of the mind exactly harmonising with the physical formation. Young Negro children are nearly as intelligent as European children; but the older they grow the less intelligent they become. They exhibit, when young, an animal liveliness for play and tricks far surpassing the European child. The young ape's skull resembles more the Negro's head than the aged ape: thus showing a striking analogy in their craniological development.

It has been pointed out that there were four forms of the human pelvis, and that they might be classified under the following heads:—The oval (European), round (American), square (Mongol), and oblong (African). The latest researches of Dr. Pruner Bey enable him to affirm that this law is perfectly applicable to the Negro. The head of the Negro is the best type of the long skull, with small development of the frontal region. The form of the pelvis is narrow, conical, or cuneiform, and small in all its diameters. Vrolik has asserted that the pelvis of the male Negro bears a great resemblance to that of the lower mammalia. With respect to the capacity of the cranium of the Negro, great difference of opinion has prevailed.* Tiede-

* Dr. Pruner-Bey gives the following interesting summary of the Osteological peculiarities of the Negro race:—

Of the Cranium.—"Cerebral cranium.—The antero-posterior diameter of the cerebral cranium approaches 19 centimeters; the transversal diameter is about 13.6; the face measures, from the chin to the hair, 18 centimeters; and the distance of the zygomatic arches is 13 centimeters. I class the cranium of the Negro in the category of harmonic dolichocephali.

Cerebral Vertebræ.—"The coronal bone is rather short and narrow than receding backwards, frequently distinguished by slender superciliary arches, rarely by frontal bumps, but usually by a protuberance on the median line, which corresponds with the third primordial convolution of the brain. A slight compression is clearly marked on the two sides of the protuberance. The nasal apophysis is always more or less large, according to the conformation of the nose. The orbital apophyses, large at the base, are more curved downwards than outwards. The temporal portion of the coronal presents frequently on the top a slight dilatation, at the bottom on the contrary it is compressed. The contours vary, according to the general form of the cranium, when this is very much elongated and compressed on the sides, the coronal is more elliptic, and more parabolic when the contrary is the case. The frontal sinuses exist; they are but moderately developed as all the aerial reservoirs. The summit of the cranium presents along the sagittal suture an ogival or flattened, rarely vaulted, conformation. The great extent of the second cranial vetebra, and its predominance over the first and third, is clearly defined, specially at the posterior part where the parietals slope gently down towards the occiput, whilst their descent towards the temples is always very

mann's researches, although very limited, have until recently been accepted as conclusive. He stated it as his opinion that "The brain of the Negro is, upon the whole, quite as large as that of the European and other human races; the weight of the brain, its dimensions, and the capacity of the *cavum cranii* prove

abrupt. In cases where the cranium of the male negro approaches the female type, the posterior descent of the parietals approaches a vertical line, and the horizontal section represents a wedge, instead of an ellipsis, which predominates in the typical form of the Negro cranium.

"When the cranium is viewed in profile, the temples appear deeply hollowed in front, flattened or elongated backwards. The anterior margins of the temporals are frequently joined to the coronal, on account of the shortening of the great alæ of the sphenoid. The parietal knobs are lower and less marked in the male than in the female, and the superior semicircular lines, though well marked, reach rarely the arch of the cranium. The squamous part of the temporal is relatively low and long; its margins are irregular. The zygomatic arches are convex, rarely flattened; the meatus auditorius presents a large and usually round orifice. The greatest width of the cranium is thus as frequently found at the posterior and superior angle of the squamous temporal as at the level of the parietal protuberances. Taken from this point, the cranium diminishes in breadth towards the occiput, especially when the latter projects, which is seen in most cases. There is a rather striking parallelism between the coronal and the superior part of the occipital squama; the latter being relatively small, curved, narrow, like the frontal squama and in the elliptic crania it is arched in the centre. In this case its margins intercept an obtuse angle; in the contrary case they are parabolic. The Wormian bones may be met with in the crania of Negroes, and even form a complete series along the lambdoid suture; but these cases are rare.

"The base of the cranium is always relatively narrow; that part of the occipital squama where the muscles are attached, presents sometimes a horizontal, but more frequently a slightly inclined, long, and narrow plane. In the first form the superior part of the squama rises more to a right angle towards the lambdoïd suture than in the second form. The surface of the squama, marked by the imprint of the muscles, represents a truncated pyramid the base of which touches the anterior border of the great occipital foramen. This aperture, always of a more or less elongated shape, is slightly inclined from before backwards, so that its posterior border at least is above the level of the palatine arch. Its position in relation to the centre of gravity is in accord with dolichocephaly. (The distance from the occipital hole to the base of the nose and the alveolar margins of the incisors, is naturally more considerable in the Negro than in the orthognathous races; but the distance of this hole to the base of the forehead, presented only slight differences. In the brachycephalous races, on the contrary, especially in those with flattened occiput, the occipital foramen is farther back. It is, moreover, difficult to find crania in which this aperture corresponds exactly to the centre of the cranium, as asserted by some anatomists.) The condyles of the occiput are elongated, narrow, much inclined. The petrous portion of the temporal voluminous. The basilar bone is long, narrow, slightly inclined from before backwards. The development of the mastoïd apophyses corresponds with the greater or lesser massiveness of the cranium; the styloïd apophyses are frequently much elongated; the pterygoïd apophyses are large, distant, and more or less inclined. The union of the palate with the maxillary is usually formed by an indented or undulated, instead of by a plain suture. The palate is elongated, elliptic rather than parabolic, superficial, or deep. It is only in exceptional cases that its width exceeds its length. All the apertures at the base of the cranium are very spacious. We are at the same time struck by the elliptic contours of this base and its general flatness, which renders the elevation of the borders of the occipital foramen more perceptible."

this fact."* All recent researches have, however, done much to show that Tiedemann's investigations are not only unsatisfactory, but that his deduction is not warranted by the facts which we now have at hand. Blumenbach's, Knox's and Lawrence's conclusions did not accord with Tiedemann's. But the most satisfactory researches on this point are those made by the late Dr. Morton, of America, and his successor, Dr. J. A. Meigs, of Philadelphia. Dr. Meigs, in following out the researches of his predecessor, has found that in size of the brain, the Negro comes after the European, Fin, Syro-Egyptian, Mongol, Malay, Semitic, American Indian, and the Esquimaux; but that the brain of the Negro-race takes precedence of the ancient civilised races of America, the Egyptian of all periods, the Hindoo, the Hottentot, the Australian, and the Negroes of Polynesia. Thus we see that the Negro has at least six well-defined races above him, and six below him, taking the internal cavity of the skull as a test. Pruner Bey says that his own experience with the external measurements did not yield essentially different results. But we now know that it is necessary to be most cautious in accepting the capacity of the cranium simply, as any absolute test of the intellectual power of any race.

The recent researches of Huschke on this point are most significant and valuable. He gives the following mean measurements of the surface of the cranium, viz. :—

Male Negro.	Male European.
53206 square millimètres.	59305 square millimètres.
Female.	Women.
49868 „ „	53375 „ „

Relative size of three cranial vertebræ expressed in hundredths (1).

	Negro.	Negress.	Male European.	Female European.
1st Vertebra - -	7·7	8·1	9·7	9·68
2nd and 3rd together -	92·3	91·9	90·3	90·32
	100·0	100·0	100·0	100·00
2nd Vertebra alone	75·7	76·4	72·7	74·1
3rd Vertebra - -	24·3	23·6	27·3	25·9
	100·0	100·0	100·0	100·0

"It is surprising," says Pruner Bey, who quotes these tables,

* *Philosophical Transactions*, 1836.

"to observe to what a degree the mean capacity of the Negro cranium* approaches in its *ensemble* that of the European female, and particularly how much in both the middle vertebra predominates above the two others; whilst on the contrary, in the European male, the posterior vertebra, and particularly the anterior, are more developed in relation to the middle vertebra than they are in the Negro and in the European female. It

* Pruner Bey quotes the following Table respecting the cerebral cranium of the Negro.*

DESIGNATION OF MEASURES.	Mean Measures in Millimeters. Mean of 24 Negros.		Mean of 12 Negresses.	
1°. DIAMETER (BY COMPASS).				
Antero-posterior	186.4		176.4	
Vertical	124.8		,,	
Transverse Diameters: Inferior frontal	100.0		95.8	
Transverse Diameters: Superior frontal	113.4		108.7	
Transverse Diameters: Bi-temporal	125.0		119.2	
Transverse Diameters: Bi-auricular	112.7		108.0	
Transverse Diameters: Bi-parietal	134.2		130.0	
Transverse Diameters: Bi-mastoidian	117.7		111.6	
2°. CURVES (BY METRICAL TAPE).				
Horizontal circumference	511.7		492.5	
Transversal bi-auricular curve	305.2		295.5	
Vertical antero-posterior circumference	504.0		489.8	
Decomposed in: 1°. Middle part: Frontal part	105.0		108.3	
Decomposed in: 1°. Middle part: Parietal part	136.5	355.9	128.3	364.5
Decomposed in: 1°. Middle part: Occipital part	114.4		109.9	
2°. Inferior part: Length from the occipital foramen	35.9		34.0	
2°. Inferior part: Distance from the anterior margin of the foramen to the frontal eminence	112.2	148.1	104.3	138.3
3°. OTHER MEASURES.				
Distance in a straight line from the meatus auditorius: to Nasal eminence	113.1		107.1	
Distance in a straight line from the meatus auditorius: to occipital protuberance	110.9		107.0	
Dimensions of the occipital foramen: length	35.9		34.0	
Dimensions of the occipital foramen: breadth	30.3		28.0	
4°. MILLESIMAL RATIO.				
Circumferences: horizontal circumference	1000		1000	
Circumferences: vertical	985		984	
Diameters: length (antero-posterior diameter)	1000		1000	
Diameters: breadth (parietal diameter)	720		737	
Diameters: height (vertical diameter)	669		585	

* See *Memoires de la Société d'Anthropologie*, 1861.

should be remarked that the occipital vertebra of the Negress is more spacious than that of the Negro."

Tiedemann asserted that the brain of the Negro did not resemble that of the Oran-útan more than that of the European, except in the more symmetrical distribution of the gyri and sulci. Tiedemann also denied Sömmering's assertion that the nerves of the Negro are larger, in proportion to the brain, than in the European; but Pruner Bey has confirmed Sömmering's opinion.

There seems to be, generally, less difference between the Negro and the Negress,* than between the European male and female: but on the other hand, the Negress, with the shortened humerus, presents a disadvantage "which one might be tempted to look at as a return to the animal form" (Pruner). Lawrence says,† "the Negro structure approaches unequivocally

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* *The Negress.*—"Before reviewing the chief varieties which the Negro type offers to travellers, it is necessary to cast a glance at the Negress.

"She possesses a cranium shorter, rounder, and wider in the posterior part of the middle vertebra; the parietal protuberances are more prominent, the apertures of the orbits frequently nearly circular, characters which approach her a little to the European female. As regards stature and the length of the hair, as well as in the proportions of the parts composing the inferior limb, the Negress resembles her husband more than the European female resembles her husband. As regards the latter point, it is not rare to find also in Europe, females of high stature and a muscular aspect. The features of the face do not, in the two sexes of the Sudan, present the same differences as in the Aryan race. The mammæ are less rounded, but already more conical in early age. Their relaxing is rapid and excessive. This peculiarity is, however, though in a less degree, found in Oriental females in other places, and of different origin. The pelvis presents, as regards width, some advantage over that of the male; the iliac bones are inclined towards the horizon, thinning towards the centre, without, however, being transparent; the haunches are rounder, steatopygy (fatty lumps on the buttocks) is only exceptionally met with. The neck of the matrix is large and elongated; the aperture of the vagina has a forward direction, despite of the inclination of the pelvis." (Pruner Bey.)

† Mr. Lawrence thus summarises the chief physical characters of the Negro "The characters of the Ethiopian variety, as observed in the genuine Negro. tribes, may be thus summed up:—1. Narrow and depressed forehead; the entire cranium contracted anteriorly; the cavity less, both in its circumference and transverse measurements. 2. Occipital foramen and condyles placed farther back. 3. Large space for the temporal muscles. 4. Great development of the face. 5. Prominence of the jaws altogether, and particularly of their alveolar margins and teeth; consequent obliquity of the facial line. 6. Superior incisors slanting. 7. Chin receding. 8. Very large and strong zygomatic arch projecting towards the front. 9. Large nasal cavity. 10. Small and flattened ossa nasi, sometimes consolidated, and running into a point above."—*Lectures on Physiology, Zoology, and the Natural History of Man*, 1819, p. 363.

to that of the ape;" while Bory St. Vincent,* and Fischer† do not greatly differ in their description of the anatomy of the Negro from the facts I have adduced.

There is no doubt that the Negro brain‡ bears a great resemblance to a European female or child's brain, and thus

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* Bory de St. Vincent (*L'homme*, Paris, 1827) says:—"Large; the skin black and entirely glossy, with the rete mucosum of Malpighi thicker and also black; hair black, woolly, felted together; the anterior part of the skull very narrow; flattened on the vertex, and rounded behind; eyes large, subrotund, prominent, always damp, cornea yellowish, iris tinted of a chestnut black, eyebrows very short; nose flat (nasal bones flattened); zygomatic arches protuberant; ears of moderate size and prominent; lips thick and brown; inside of the ears bright red; jaws, especially the lower one, projecting; incisor teeth procumbent; chin short, round, receding; beard rare; breasts pear-shaped, loose during milking; thighs and shanks partially curved."

† Fischer (*Synopsis Mammalium*, 1829-30), says:—"The brain is less, and the origins of the nerves thicker than in the American races, an opposite condition prevailing in the Japetic races; skull-cap one-ninth less ample than in the European, sutures more narrow; all the bones whiter; intermaxillary bone inclining above the chin; pelvic bones broad; muscles, blood, and bile of deep colour; fœtid sweat; filthy; voice sharp and shrieking; nervous-phlegmatic temperament."

‡ Pruner-Bey makes the following observations respecting the brain: "Sœmmering had already observed that the peripheral nerves are larger, relative to the volume of the brain, in the Negro than in the white man. This fact is demonstrated in all its details by the beautiful preparation from the skilful hand of M. Jacquart, exhibited in the gallery of the Museum of Natural History.

"The brain, narrow and elongated, presents on its surface always a brownish tint on account of a considerable injection of venous blood. The superficial veins are very large, and resemble by their stiffness the sinus of the dura mater. The grey matter shows in the interior a clear brown colour; the white substance is yellowish. I am inclined to attribute this colour rather to the blood than to a special pigment. Melanotic patches may be met with in the meninges as elsewhere. Sœmmering has observed blackish spots on the spinal marrow. The cortical layer of the grey substance of the cerebral hemispheres is of less thickness than in the European. Regarded in front the brain presents a rounded point; from the top the parts appear grosser and less varied than in the European. The convolutions, especially the anterior and the lateral, are flat and of little depth, excepting the primary convolution, the curvature of which produces the frontal eminence. In following the undulations from the front backwards, we remark less lateral deviations in the convolutions, which render the Aryan brain a real labyrinth. In the middle lobe the convolutions seem considerably raised, but they are coarse. The posterior lobe has always appeared to me flattened on the top, as the anterior at the base. Viewed in profile, it is chiefly the direction of the fissure of Sylvius and its interior which has occupied the attention of anatomists. (Huschke cites with reserve the observations of Van der Kolk, who places in parallel some peculiarities of this region of the Negro brain with the disposition existing in apes. This part of cerebral anatomy has as yet been little cultivated, and before arriving at conclusions we should wait until the modifications which the human brain undergoes in all the periods of its development are better known than they are at present; hence I confine myself simply to draw attention to Van der Kolk's remarks. In order to establish race characters upon such data, we should not forget what Rousseau says of the brain of Cuvier: "Multiplied convolutions were in the centre, sur-

approaches the ape far more than the European,* while the Negress approaches the ape still nearer.

With regard to the chemical constituents of the brain of the

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mounted by a mammilated exuberance, which formed an integral part of these convolutions." Are we on that account disposed to assume that this great man belonged to another race?) With regard to the former, I have never been able to observe any appreciable difference between the brain of the Negro and that of the Egyptian, which I have placed side by side in order better to study the relation of the parts externally. The superior part of the brain above the corpus callosum is relatively little elevated. The cerebellum has a less angular form than in the European; the vermis and the pineal gland are very large. Finally, the consistence of the cerebral mass is unquestionably greater in the Negro than in the white man.

"The inspection of the Negro brain shows that the convolutions of the centre are clearly marked as in the Aryan fœtus of seven months (Reichert), and that the secondary details are less distinct. By its rounded apex, its less developed posterior lobe, it resembles the brain of our children; by the prominence of the parietal lobe it resembles that of our females, only that the latter is broader in the European female. The form of the cerebellum, the volume of the vermis and the pineal gland also place the Negro by the side of the Aryan child.

"Having indicated the general characters relating to the external form of the great nervous centre, I must say a word with respect to its weight and the relative proportions between cerebrum and cerebellum. The number of observations on this point is very restricted, nevertheless we obtain some important points. First, the extremes present a scarcely credible difference, were it not confirmed by the great diversity in the measurement of the horizontal circumference of the cranium. Mascagni gives 738 grammes as the weight of one brain and 1587 grammes as the weight of another. The results obtained by Sœmmering and Cooper seem to approach the average weight: 1354,5 and 1458 grammes. The mean for the weight of the cerebellum compared to that of the cerebrum would be : : 13,83 : 85,93. Measurement shows that the cerebellum of the Negro, in accord with the general form, excels by 3,13 in length that of the European, which is, however, broader. Weight and measurement establish that the two sexes present less differences in both respects in the Negro race than in the Aryan race."—*Pruner Bey.*

* "The situation of the foramen magnum of the occipital bone is still a matter of dispute. Dr. Prichard thought it to be 'the same in the Negro as in the European;' and so it may be, if no allowance be made for the face. The situation of the foramen magnum of the occipital bone is not the same in the Negro as in the European. Dr. Prichard says it is exactly behind the transverse lines, bisecting the antero-posterior diameter of the base of the cranium. Supposing this measurement to be correct, which it is not, it has nothing to do with the *pose* or position of the head upon the vertebral column, which, all must know, depends on the position of the condyles of the occipital bone. A line bisecting the antero-posterior diameter of the skull, and dividing into two equal parts, passes in the European head through the centre of the condyles of the occipital bone; and the same measurement applies nearly to the antero-posterior diameter of the entire head. Not so in the coloured races. In speaking of the base of the cranium, I am not quite sure to which Prichard and his followers allude; for very generally in anatomical works the base of the skull, including the upper jaw, is confounded with the true base of the skull." Robert Knox. *Anthropological Review*, vol. i., p. 266. M. Broca has well pointed out the contradictions of Prichard as to the position of the foramen magnum, and clearly establishes the fact that it is placed further back in the Negro than in the European. *Bull. de la Soc. d'Anthropologie*, vol. iii., p. 524.

Negro, little that is positive is yet known. It has been found, however, that the grey substance of the brain of a Negro is of a darker colour than that of the European, that the whole brain has a smoky tint, and that the *pia mater* contains brown spots, which are never found in the brain of a European. M. Broca has recently had an opportunity of confirming the truth of this statement.* With regard to the convolutions, there is unanimous testimony that the convolutions of the brain of the Negro are less numerous and more massive than in the European. Waitz thinks that the only resemblance of the Negro's brain to that of the ape is limited to this point.† Some observers have thought they have detected a great resemblance between

* The following observations by M. Paul Broca on the brain of the Negro is extracted from *Bulletins de la Soc. d'Anthropologie*, 1860. Before reading a manuscript addressed to the Society by Professor Gubler, of the Faculty of Medicine, M. Broca stated the circumstances which induced Professor Gubler to present it. A negro died in the Hospital de la Pitié. The body was brought to the amphitheatre of Clamart, when M. Broca asked of the prosector of the hospital to examine the brain of that body. Owing to the great heat of the month of August, the body was already in an incipient state of decomposition, and the brain was too soft to study the convolutions. M. Broca had, therefore, to confine himself to examining the colour of the substance. In order to render the examination more easy, M. Broca opened at the same time the cranium of a white subject, which was brought in the same day. The pia mater of the Negro presented in certain spots a brown tint; nothing of the kind existed in the white subject. The white substance of the Negro brain had a smoky tint, but it was especially in the grey substance that the brown tint was marked. The two brains were placed in two separate vases containing the same quantity of alcohol. After three days they were sufficiently firm to be examined. The difference of coloration was then as decided as on the first day. In order approximately to determine the relative weight of the two brains, they were, after the removal of the membranes, dried upon some linen during a few minutes, and placed in the scale. The brain of the white subject weighed 1003 grammes, that of the black weighed only 925.5 grammes, being a difference of 8.3 per 100. This individual fact would be insignificant if it did not accord with the known data. Thus it is well known that the measurements of the capacity of the cranium made by Meigs, according to Morton's method, gave an average of 93½ cubic inches for European and Anglo-American crania, and only 82¼ for Negro crania, being a difference of 11¼ cubic inches; that is to say, that the cranial capacity of the Negro being represented by 100, that of the European is represented by 112. M. Broca had preserved in alcohol the least altered portion of the Negro brain, and presented it to the Anthropological Society; but fearing that the long contact with the alcohol might modify its coloration (which, however, it did not), he showed it when fresh to the Biological Society. Already, some ten years ago, M. Rayer made to the same Society an analogous present; and it is known that since Meckel in 1753 published a paper on this subject in the *Memoirs of the Prussian Academy of Science*, many authors have stated that the brain of the Negro is notably of a darker colour than that of the white man."

† See Introduction to *Anthropology*, by Dr. Theodor Waitz. Edited from the first volume of *Anthropologie der Naturvölker*, by J. Frederick Collingwood, Esq., F.G.S., F.R.L.S., F.A.S.L., Hon. Sec. of the Anthropological Society of London, Foreign Associate of the Anthropological Society of Paris, p. 93.

the development of the temporal lobe in the Negro and ape; but much further observation is required on this important subject.

The eyes are more separated than in the European, but not so much so as in the Mongol. The aperture of the eye is narrow, horizontal, and both eyes are wide apart. All the teeth, especially the last molars, are generally large, long, hard, and very white, and usually show little signs of being worn. In some Negro-skulls there has been found an extra molar in the upper jaw. There is also sometimes a space between the incisors and canine* teeth of the upper jaw. The inferior molars sometimes present in the Negro race five tubercles, and this anomaly is sporadically found in other races.† It has been noticed in the European and the Esquimaux, but is said by my friend Mr. Carter Blake to be more frequent in the Negro

* "The conical form [of the canine] I find best expressed in the Melanian races, especially the Australian. . . . It is also very well marked in the dentition of the Mozambique Negro, figured by F. Cuvier.—*Dents des Mammifères*, pl. 1;" *Owen. Odontography*, 4to., London, 1840-45, p. 452.

† "An examination of the teeth in a considerable number of African Negro crania has enabled us to draw the following conclusions:—In the African Negro the teeth are usually of large, but not excessive, size; they are regular, commonly sound, although caries is occasionally observed, and they seldom present that extreme amount of wearing down of the cutting and grinding surfaces which may be found so commonly in the Australian and Polynesian. The incisors are large, broad, and thick, but not of greater absolute dimensions than in numerous individuals amongst the white varieties. The teeth do not depart from the human type in their relative proportions; for wherever the incisors and canines are of considerable size, the true molars are likewise large, and maintain that superiority which is a distinguishing feature of the teeth of Man. The lateral incisors are well formed, and in the perfect entirety of their outer angles they adhere more invariably to the human type than do the same teeth in some more civilised races. The canines are not proportionally longer or more pointed than in the white man. The premolars agree in configuration and relative size with the typical standard. The true molars are usually of large size, generally larger than in the European; the dentes sapientiæ, although smaller than the other molars, are in the majority of instances of greater relative and actual dimensions, and the fangs of the last-named teeth are usually distinct in both jaws. But in the character of their grinding surfaces and their general contour, the molars of the African Negro present no departure from the typical configuration, and, as in other races, there are many instances in which a general description will not entirely apply. . . . . We would observe that, according to our limited experience, the general characteristics of the African Negro dentition are best exemplified (albeit liable to exception) in the Negroes of the Western Coast. The teeth in the crania we have seen from Eastern Central Africa, and from the Mozambique, appeared to us to present less markedly the minor differences above noted. The prognathic development of the jaws also, and the consequent obliquity of implantation of the incisor teeth, though common in a varying degree to all African nations, not excluding the Egyptians, attains its greatest development in crania from the Western Coast."—F. C. Webb. *Teeth in Man and Anthropoid Apes*, p. 41.

and Australian than in any other race. Sometimes Negroes have thirty-four instead of thirty-two teeth. The skin between the fingers, according to Van der Hoeven,* reaches higher up than in the European. The skin is also much thicker, especially on the skull, the palm of the hand, and the sole of the foot. The *rete mucosum*, which is the chief seat of coloration, presents nothing particular as regards structure.† The hair of

* *Bijdragen tot de Natuurlijke Geschiedenis van der Negerstam*, Leyden, 1842.

† M. Pruner thus speaks of the skin:—"Having now indicated the more prominent characters of the skeleton, I pass to the examination of the Negro with his integuments.

"The skin, supple and cool to the touch, presents a velvety aspect (besides the shades of colour already mentioned). Upon the abdomen such prominences form zigzags and broken fine lines; on the forearm they are seen in the form of small lozenges, and even in the extremities the skin is not altogether smooth. This aspect is partly the consequence of the great development of the glandular apparatus, indicating a great turgescence of the tissues. Thus the skin of the penis does not merely present simple folds, but mammilated eminences. The dermis is thicker than in the other races, specially on the cranium, the palm, and the sole. The epidermis of an ash-grey colour is very resisting. The rete mucosum, which is the chief seat of the coloration, presents nothing particular as regards its structure. Its contents, viz., the pigment, is deposited in a shapeless mass, or in granules, chiefly around and in the interior of the nuclei of polyhedric cells, which are disposed in numerous irregular layers. The pigment presents shades of colour according to the position of the cells. The deeper and more coloured cells are of a blackish brown, whilst those approaching more the dermis of a more or less dilute yellow resemble the serosity of the blood (Koelliker). The coloured web may be considered as the complement of the epidermis, to which it adheres more closely than to the dermis, so that it is detached in blistering, though some patches usually remain on the dermis. The colour of the cicatrices in Negroes differs according to the colour of the individual, and the time elapsed since the cicatrisation. I have observed nothing noteworthy in this respect. It is known that the lines in tattooing present a deeper colour than the skin from the materials rubbed in.

"The Negro loses a portion of the pigment on being transported to the north. It is always upon the prominent parts, such as the nose, the ears, &c., that a slight diminution is observed in dark subjects. I have, however, never observed this change in individuals with a velvety black skin which has sometimes a blueish shade. But in chronic diseases the diminution of the pigment is very perceptible; thus the Negro grows, in a certain manner, pale like the European. It is a general rule that the deeper coloured a Negro is, compared to other individuals of his tribe, the better is his health. With regard to the relation between the degree of coloration and the intellect, the accounts of travellers do not agree. Thus, Dr. Barth asserts that in the centre of the Sudan, the most glossy jet black skin belongs to the most intelligent tribes. The example of the Yaloffs seems to confirm this as regards the West. Mr. Speke, on the contrary, states with regard to the Eastern populations between Mozambique and Lake Nyassa, that the tribes of a lighter colour, though Negroes in all other respects, by far excel in activity, bravery, and intelligence their jet black brothers. Very probably both versions are correct; for we see in India, as well as Arabia, the two extremes of colour combined with the same intellectual capacities in peoples evidently congeners.

"The intensity of the colour does not depend on the geographical latitude in the tropical zone of Africa. The extremes of the chromatic scale are

the Negro is essentially* different from that of the European, and consists of coarse, crisp, resembling a frizzly sort of wool,

in juxtaposition in the principal spots, on the Senegal as well as on the Gaboon, north of the Niger and south of Lake Tsad, towards the Bay of Biaffra as in Mozambique, where M. Froberville counted thirty-one different shades of colour. Continued displacements have so much intermixed the tribes, and amalgamated entire nations, that it would be vain to determine, even by approximation, the primitive country of the true Negroes, and to derive therefrom any theory regarding the influence of geographical latitude on coloration. It is equally impossible to establish the degrees of intermixture which the representatives of the chromatic map have undergone. But, taking the deep brown or black Negro as the starting-point, can we attribute his colour to the soil, the air, the position of the sun, the great fluctuations between the diurnal and nocturnal temperature, an aliment rich in carbon such as the butter-tree, fermented liquors, &c., on one side, and the physiological reaction of the organism on the other? Must we, as regards the latter point, take in account the important part which the skin and the liver take in the respiratory functions according as we proceed from north to south? Must we admit that, in this respect, extremes meet, so that in turning to the high north, we find the coloration increase as we approach the pole? Science is as yet not in possession of the necessary facts to solve this question; experimental physiology must encounter it. As regards the etiology of the colour of the Negro, we must recur to the laws of heredity."

The same author makes the following remarks respecting the distribution of the pigment on the mucous membranes, the subcutaneous tissue, and the viscera:—"The pigment is in the form of black patches, found not merely upon the tongue, the velum, the conjunctivæ, and the external angles of the eye, but also upon the mucous membrane of the intestinal canal, etc.

"The cellular tissue is very abundant, especially on the erectile organs. The mammæ, penis, lips, ears, and nostrils. The colour of the conjunctivæ, always more or less injected, is more or less yellowish; the fat is always of a wax colour. An analogous coloration is observed in all the cellular and fibrous membranes and even in the periosteum. The development of the muscles, excepting the masseters, the external muscles of the ear, the larynx, and sometimes of the temporals, are not in proportion to the weight of the bones; their colour is never of the bright red of the European, but rather of a yellowish tint, sometimes approaching the brown. M. Eschricht has found the muscles of the larynx very strong, the crico-thyroidei are especially large; he has moreover found that a portion of the fibres of these last muscles ascend to the internal surface of the thyroid cartilage. Should that be a trace of the internal crico-thyroid muscles of the hylobate apes? The visible mucous membranes of the mouth, the nostrils, etc., are of a cherry colour, excepting the lips which are bluish.

"As upon the skin, so is the glandular system much developed in the internal integument; the intestinal canal always presents a broken aspect, especially in the stomach and the colon. The intestinal mucus is very thick, viscid, and fatty in appearance. All the abdominal glands are of large size, especially the liver and the supra renal capsules; a venous hyperæmia seems the ordinary condition of these organs. The position of the bladder is higher than in the European. I find the seminal vesicles very large, always gorged with a turbid liquid of a slightly greyish colour, even in cases where the autopsy took place shortly after death. The penis is always of unusually large size, and I found in all bodies a small conical gland on each side at the base of the frænum.

"The vascular apparatus is very strong; but the nervous system visibly

* Dr. Pruner-Bey has just contributed a most valuable paper to the Anthropological Society of Paris, *De la chevelure comme caractéristique des races humaines, d'après des recherches microscopiques.* A translation of this article will be found in the fourth number of the *Anthropological Review.*

growing in tufts like the wool of sheep. It is rarely more than three inches long, and generally not nearly so much.* The larynx in the Negro is not much developed, and the voice resembles sometimes the alto of an eunuch. In the male the voice is low and hoarse, and in the female it is acute and shrieking; at least, this is the opinion that has generally been given by Hamilton Smith and others: but there appear to be exceptions, for Dr. R. Clarke† says that "a pleasing manner, soft and winning ways, with a low and musical laugh, may in strict truth be declared to be the heritage of most of the Negro women." There is a peculiarity in the Negro's voice by which he can

predominates over the arterial. The small arteries present everywhere numerous flexuosities.

"The heart is powerfully organised and the right cavities are always very spacious. I have never observed here the least anomaly. The blood of the Negro (apart from anæmia and the dropsy) is always very thick, viscid, and pitchy; it rarely is projected in a jet in bleeding; it strongly adheres to the vessel, and always presents a serosity of a more or less dark yellow colour. The lungs relatively much less voluminous than the viscera of the abdomen, are usually melanose and pushed in by the stomach, the spleen, and the liver; it might be said that the latter organ usurps their place."

* "The hair of the adult Negro is very fine, hard and elastic; generally black, exceptionally of a fiery red, resembling wool, in describing several circles from 6 to 8 millimeters. Its length in the male is usually from 9-12 centimeters. In the Negress of East Africa it rarely descends below the shoulders. These women wear the hair in small tresses, carefully greased. In the male the hair frequently has the appearance of a regular wig. Its insertion seems to follow another law in the Negro than in the white man. In the latter it presents irregular lines which converge and diverge in crossing, whilst in the former it is always circular. From this disposition frequently result separate tufts as in the Hottentot, and this peculiarity is very common among the Negresses of which I have spoken.

"The hair of the Negro is not cylindrical. Transversal sections show that its circumference is always an ellipsis, the large diameter exceeds the small diameter by 1-3rd to 3-5th. What is, moreover, remarkable, is that the large diameter, examined in different sections, does not remain parallel to itself; it turns as it were around the axis of the hair, so that the summits of these small ellipses, instead of being disposed in a straight line, describe around the hair two spiral curves (Koelliker). It is to this disposition that the crisp state of the hair of the Negro is due. With regard to the elementary microscopic structure, the hair of the Negro differs from that of other races only by its medullary portion. The central medullary and aeriferous canal which is clearly seen in hair with elliptical circumference, and of which some traces are found in the cylindric hair of Turanians, is absent in the Negro, even in those of his race which have red hair.

"In the Aryan race, the hair of the same individual presents different shades in different parts of the body, but it is certain that the hair of the Negro is finer, elliptical and crisp, and that I have never found in it any trace of a medullary canal. The Negro race has, moreover, no down upon the body; and but few hairs on the pubes and armpits. The beard comes late in the male; it is silky or slightly crisp on the upper lip, more or less frizzled on the cheeks and the chin. The eyelashes curved; the eyebrows but little furnished are generally but little arched. The contrary is, according to Dr. Barth, observed in the Mousgous."—PRUNER-BEY.

† *Transactions of the Ethnological Society*, vol. ii of New Series.

always be distinguished. This peculiarity is so great that we can frequently discover traces of Negro blood when the eye is unable to detect it. No amount of education or time is likely ever to enable the Negro to speak the English language without this twang: even his great faculty of imitation will not enable him to do so.

Having thus briefly recapitulated the anatomical peculiarities of the Negro, we now come to the physiological* difference between the Negro and European.

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* Mr. Pruner Bey gives the following :—*Physiological Fragments.*—"The penetrating odour which the Negro exhales, has something ammoniacal and rancid; it is like the odour of the he-goat. It does not depend on the aqueous perspiration, for it is not increased by it. It is probably a volatile oil disengaged by the sebaceous follicles. This odour much diminishes by cleanliness, without, however, entirely disappearing. We are not aware whether this race-character changes by a uniform diet, as is the case with the fishers and opossum hunters in Australia.

"The observations on the temperature of the internal cavities of the Negro race are not numerous enough to draw conclusions. It is, nevertheless, useful to note the results of the researches of M. d' Abbadie. In Upper Ethiopia this celebrated traveller found at all seasons, in the buccal cavity of the Negro, a higher temperature than in individuals belonging to other races. The young Negresses always preserve in Egypt this excess of temperature; not so the young Negroes: these have the mouth warmer than young men of other races in hot weather, but colder, on the contrary, in cold weather.

"The pulse of the Negro in Egypt nearly corresponds to that of the other inhabitants, being, from 60-70 pulsations per minute. The contrary is observed in male children, from 10-13 years, and in young females from 14-20: for the former 74-96; for the latter 84-104 pulsations per minute.

"The senses of the Negro are not developed as in other races which are nearer to the state of nature, or live in a different climate. Vision does not in the Negro surpass that of the European; the flattening of the cornea renders the Negro rather presbyopic than myopic. From his inclination and talent for music, hearing seems his most developed sense; at any rate he excels, in this respect, the Egyptian. To judge from the extent of the nasal cavities, smell ought to be very acute, such, however, does not appear to be the case. This applies also to the sense of taste; the Negro is omnivorous. Touch, this general corrector of the white races, is little developed in the Negro, which accords with the flattening of the tactile cushions. But the most striking phenomenon with regard to general sensibility, is the apparent apathy of the Negro as to pain. In the most serious affections of internal organs, the Negro, arrived at a certain point, cowers on his bed (at least in the hospitals) without responding by any sign to the care of his physician. However, in a state of civilised slavery, where he has acquired some knowledge, he becomes more communicative, without, however, betraying any manifestation of pain. Bad treatment causes the Negro, the Negress, and the child to abundantly shed tears, but physical pain never provokes them. The Negro frequently resists surgical operations, but when he once submits, he fixes his eyes upon the instrument and the hand of the operator without any mark of restlessness or impatience. The lips, however, change colour and the sweat runs from him during the operation. A single example will support our view. A negress underwent the amputation of the right half of the lower jaw with the most astonishing apathy; but no sooner was the diseased part removed, than she commenced singing with a loud and sonorous voice, in spite of our remonstrances, and the wound could only be dressed after she had finished her hymn of grace.

The assumption of the unity of the species of man has been based chiefly on the asserted fact that the offspring of all the

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"The phases of development present in the Negro race some peculiarities which appear to me worth notice. We know next to nothing of the embryonic state. The Negro infant is born without prognathism, with an ensemble of traits which is more or less characteristic as regards the soft parts, but which is scarcely marked in the cranium. In this respect the Negro, the Hottentot, the Australian, the Neo-Caledonian, do not indicate in the osseous system the difference which will arise later. The new born Negro child does not present the colour of the parents; it is of a red colour mixed with bistre and less vivid than that of new-born European children. This premature colour is, however, more or less deep, according to the regions of the body. From reddish it passes to slate-grey, until sooner or later, according to the climate and soil, it corresponds to the colour of the parents. In the Sudan the metamorphosis, *i.e.*, the development of the pigment, is generally completed at the end of the first year; in Egypt only at the end of three years. The hair of the Negro baby at first is rather chestnut than black; it is straight and slightly curved at the point. I was unable exactly to determine the extent of the fontanelles, but to judge from the cranium, the difference in this respect from the Aryan child is not appreciable.

"The first dentition commences nearly at the same epoch as with us. I have however, observed in Egypt cases of precocious as well as retarded dentition. Suckling continues during two years at least. After the first dentition, we already observe upon the cranium certain distinctive characters, viz.:—The median line of the forehead raised, the chin retracted, the superior jaw slightly inclined, the nose widened, the occiput prominent. Still the young Negro presents, until the time of puberty, a pleasing exterior. Puberty supervenes in girls between the ages of 10-12, and in boys between 13-15 years. It is then that the great revolution in the forms and proportions of the skeleton rapidly proceeds. This process and its results follow an inverse course as regards the cerebral and facial cranium. The jaws are enlarged without any compensation for the brain: it is not meant that there is an arrest of development—no, the difference of race manifests itself merely by a different order of increase in the growth of the respective parts. Whilst in the Aryan man the moderate increase of the jaws and the bones of the face is abundantly compensated and even surpassed by a development or rather enlargement of the brain, specially of the anterior lobe: the contrary takes place in the Negro. Great compression, chiefly lateral, produced from without inwardly by the muscles destined for animal life; small reaction in the interior on part of the brain, and we have the mould of his cranium and his brain formed as we have described it. Everything is in harmony with the organism. No doubt this mode of viewing the conformation of the Negro cranium is open for discussion.

"The course taken by the obliteration of the cranial sutures, furnishes a significative commentary to these phenomena. The medio-frontal suture as well as the lateral part of the coronal suture is in the Negro invariably closed already in early youth. In the adult Negro the union proceeds then to the middle part of the coronal suture and the sagittal suture—or as I have observed on crania in East Africa—on all sutures at once. The lambdoid suture is that which remains open longest, especially on the summit. At the base of the cranium, on the other hand, the basilo-sphenoid suture is frequently found open. As regards the incisive suture, it not only persists in the infant Negro, but is very distinct in many Negro crania of an advanced age. The obliteration of the sutures seems in the Negro race to be more rapidly effected in the female than in the male.

"Prognathism has been, and may be considered, at least partly, as the result of the action of the inferior jaw on the concentric arch of the superior jaw. At any rate, the mode of articulation of this bone with the temporal, seems

mixtures of the so called races of man are prolific. Now this is assuming what yet has to be established. At present it is only proved that the descendants of some of the different races of man are temporarily prolific; but there is the best evidence to believe that the offspring of the Negro and European are not indefinitely prolific. This question is one which must be dealt with separately and proved by facts. At present we find that all *primâ facie* evidence is against the assumption that permanent hybrid races can be produced, especially if the races are not very closely allied. This subject, however, merits a special discussion, and belongs to that large and important question—human hybridity. We, therefore, cannot agree with

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much to contribute to it; for I have met with this conformation preferentially in the races in which the glenoid is large but of little depth, and the condyles of the maxillary more or less flattened, or at least elliptic; it coincides with a more or less pronounced harmony of the row of teeth. These conditions facilitate the movement of the jaw from behind forwards, whilst in the cranium with deep and contracted glenoid cavities, and with condyles more or less rounded or pointed, the movement of the jaw is preferentially vertical. I am, however, well aware of the insufficiency of this etiology, and I ask myself whether prognathism is not simply the expression of a movement towards animality. It has been thought that prolonged lactation may in the Negro favour prognathism; but I must observe that this custom prevails among many Oriental nations which are orthognathous. Moreover, it is known that the conformation is not exclusively peculiar to the African Negro. The majority of human races, whether dolicho- or brachycephalous, participate in it, as well as some civilised peoples: for instance the Peruvians, the Chinese, and Javano-Malays, at least the plurality of individuals comprising those nations. We find also exceptional cases more frequently in the ancient and modern Egyptians, less among the Jews, and less still in Western Europe. In all these cases, this conformation, however, does not exceed the first degree of the three distinct degrees we have established.

"It must also be observed that the relative depression of the middle part of the face joined to the prominence of the jaws, is the essential condition of prognathism, and of the results derived from the measurement of the facial angle. We thus comprehend that the two straight lines drawn from the meatus auditorius to the forehead, and the alveolar border of the palatine suture, rarely present in favour of the latter a difference of two millimeters. This shows us that the depression of the nose in the Negro is as essential to produce prognathism, as the increase of the jaws from behind forwards. Parturition, and lactation ordinarily give but little trouble to the Negress. Her fecundity seems to be great, for she produces up to ten children; but the manners and even the institutions much reduce the number of offspring. Decline commences in the Negress between thirty-five and forty. Whilst the ugliness which accompanies age in the female is excessive, we find that in the male the hair blanches early, and at an advanced age his external aspect loses its harmony. Even in the races of the Sudan, with clear complexions and expressive features, as for instance in the Foulahs, which some hesitate to place among the Negroes, Dr. Barth remarks on the ugliness they exhibit in old age. He observes that their face has something of the ape at that period, and he makes similar observations as regards the old ladies of the Maghis tribe, whose harmonious features when young he so much admired."

the asserted statement, especially when we find that the two scientific men who have in recent times paid the most attention to this subject—I allude to Messrs. Broca and Nott—have come to the conclusion that the offspring of the Negro and European are not indefinitely prolific. With the permission of the Society, I will enter into that question at some future day.

M. Flourens asserted that the Negro children were born white; recent observation has, however, shown that this is not the case. Benet, ex-physician of Runjeet Singh, and Dumoutier, affirm that the children are born chestnut colour. M. Pruner Bey confirms this fact from personal observation.

In the Negro race there is a great uniformity of temperament. In every people of Europe all temperaments exist; in the Negro race, we can only discover analogies for the choleric and phlegmatic temperaments. The senses of the Negro are said to be very acute, especially smell and taste; but Pruner Bey says that there has been much exaggeration as to the perfection of the senses of the Negro, and that his eye-sight in particular is very much inferior to the European. The most detestable odours delight him,* and he eats everything.

While the anatomical and physiological questions must be decided by actual facts, there still remains to investigate the psychological peculiarity of the Negro. It is here, perhaps, that the greatest amount of misconception exists in the minds of the public generally, and not unfrequently in the minds of some men of science. Wedded to the theory of a single pair for the origin of man, they attempt to show that there is in mankind no variety, nothing but uniformity.

To show I do not exaggerate on this point, I will quote the words of an esteemed friend, which he read last year at Cambridge. He says:—"For as God made of one blood all the nations of the earth, and endowed them all with the same animal, intellectual, moral, and religious nature: so has he

* Mr. Louis Fraser informs me that this is not always the case, and that sometimes a Negro will leave a vessel on account of a disagreeable odour, saying, "Cap'n, your ship stink *too* much, I can't stop."

bound them all together—in accordance with the high behest that they should increase and multiply and replenish the earth —in one common bond of universal brotherhood."

Mr. Dunn, however, it must be acknowledged, does not carry out the principles he here enunciates, for he fully admits the fact that, practically, Negro children cannot be educated with the whites. He also admits that some of the lower races are not able to conceive complex ideas, or have little power of thinking, and none of generalisation, although they have excellent memories.

The assertion that the negro only requires an opportunity for becoming civilised, is disproved by history. The Negro race has had communication with the Egyptian, Carthaginian, and Roman civilisations, but nowhere did it become civilised. Not only has the Negro race never civilised itself, but it has never accepted any other civilisation. No people have had so much communication with Christian Europeans as the people of Africa, where Christian bishops existed for centuries.* Except some knowledge of metallurgy they possess no art; and their rude laws seem to have been borrowed and changed to suit their peculiar instincts. It is alleged that the Negro only requires early education to be equal to the European; but all experiments of this kind have proved that such is not the fact. With the negro, as with some other races of man, it has been found that the children are precocious: but that no advance in education can be made after they arrive at the age of maturity, they still continue, mentally, children. It is apparently of little consequence what amount of education they receive, the same result nearly always follows, the reflective faculties hardly appear to be at all developed. The dark races generally do not accept the civilisation which surrounds them, as is shown in the South Sea, where they remain the uncivilised race by the side of the Malays. The opinion of Dr. Channing of America, is often quoted respecting the Negro. He says:—"I would expect from the Negro race when civilised, less energy, less courage, less intellectual origi-

* It is said that when the Negro has been with other races, he has always been a slave. This is quite true: but why has he been a slave?

nality, than in ours; but more amiableness, tranquillity, gentleness, and content." Now, if it were possible to civilise them, there is no doubt they would show less energy, courage, and intellectual originality (of which they would be utterly deficient) and, as to their amiableness, tranquillity, gentleness, and content, it would be more like the tranquillity and content shown by some of our domestic animals than anything else to which we can compare it. It has been said that the present slaveholders of America "no more think of insurrection amongst their full-blooded slaves than they do of rebellion amongst their cows and horses!"* It has also been affirmed (and I believe with truth) that not a single soldier has been required to keep order in the so called "Slave States" of America.

The many assumed cases of civilised Negroes are generally not those of pure Negro blood. In the Southern States of North America, in the West Indies and other places, it has been frequently observed that the Negroes in place of trust have European features, and some writers have supposed that these changes have been due to a gradual improvement in the Negro race, which is taking place under favourable circumstances. It is assumed that great improvement has taken place in the intellect of the Negro by education, which we much doubt. It is simply the European blood in their veins which renders them fit for places of power, and they often use this power far more cruelly than either of the pure blooded races. At the same time, there are doubtless many exceptions to this rule; depending perhaps on the amount of mixture of blood and inherited peculiarities. It has been affirmed that occasionally there are seen Negroes of pure blood who possess

* "The Southern planter, with a consciousness of superiority that would be ashamed to resort to fiction or imposition of any kind, takes off his coat and works in the same field and at the same labour as his 'slave.' The thought of the latter contesting his superiority never once enters his mind. As said by a sound statesman and gallant soldier of the South, 'we no more think of a Negro insurrection, than we do of a rebellion of our cows and horses.' The planter rules as naturally as the Negro obeys instinctively; the relation between them is natural, harmonious, and necessary, and their interests being indivisible, there can be no cause or motive, either for the abuse of power on the part of the master, or of rebellion on the part of the servant."—*Negroes and Negro "Slavery."* By J. H. Van Evrie, M.D. New York, 1861, p. 29.

European features: but I believe such not to be the fact, and Pruner Bey also says that "with regard to the regular Caucasian features, with which some travellers have endowed certain Negro peoples, I must state that among many thousand Negroes who have come under my own observation, there was not one who could lay claim to it."

Instances have often been quoted of reputed European skulls with Negro characters. Such an instance there is in the College of Surgeons, another in Morton's museum, and one in Gall's collection; but if we admit these to have belonged to the pure race,* we shall only be admitting that in one character the European skull sometimes resembles that of the Negro; but there will be plenty of other characters to show that they did not belong to the same race or species, and it ought simply to caution us not to base our ideas of race or species upon one character. We know that certain species of the mammalia frequently cannot be distinguished by the form of the skeleton, and we must therefore not be surprised to find that we are unable to prove a distinction of species in mankind if we take the cranium or even skeleton as a sole test.

We now know it to be a patent fact that there are races existing which have no history, and that the Negro is one of these races. From the most remote antiquity the Negro race seems to have been what it now is.† We may be pretty sure

* A large amount of mixture has continually been going on between the natives and the traders, especially on the rivers. The traders are not the finest specimens of their race, and much of the immorality of the settlements may be owing to this mixed blood. The following custom has existed for ages, and render most uncertain the parentage of some Africans who even come direct from the interior:—"The European stranger, however, travelling in their country, is expected to patronize their wives and daughters, and these unconscious followers of Lycurgus and Cato feel hurt, as if dishonoured, by his refusing to gratify them. The custom is very prevalent along this coast. At Gaboon, perhaps it reaches the acme; there a man will in one breath offer the choice between his wife, sister, and daughter. The women of course do as they are bid by the men, and they consider all familiarity with a white man a high honour."—*Wanderings in West Africa*, vol. 2, p. 24.

† As a proof that the African has not changed during the last 2,000 years, the following description of an "Aunt Chloe" of the days of Virgil may be interesting:—

Afra genus, tota patriam testante figura,
Torta comam, labroque tumens, et fusca colorem;
Pectore lata, jacens mammis, compressior alvo,
Cruribus exilis, spatiosa prodiga planta;
Continuis rimis calcanea scissa rigebant.

that the Negro race has been without a progressive history; and that Negroes have been for thousands of years the uncivilised race they are at this moment. Egyptian monuments depict them as such, and holding exactly the same position relative to the European. Morton* truly observes: "Negroes were numerous in Egypt, but their social position in ancient times was the same that it now is, that of servants and slaves."

Some writers have assumed that the Negro has degenerated from some higher form of civilisation, but we see no evidence to support such an assertion. We, however, fully admit that there are found traces of a higher civilisation, especially along the coasts visited, during all ages, by Europeans. The working of metals and imitation of European manufactures also exist in many parts of Africa. Indeed, there seems to be a great sameness in this respect throughout all Africa. Consul Hutchinson has given an interesting account of the finding of some implements used by the natives of Central Africa exactly resembling those used by the Anglo-Saxons.

Consul Hutchinson thus describes them:†—"You will be surprised, no doubt, to hear that I brought down with me from the tribes of Filatahs, in Central Africa, iron heads of spears with wooden shafts and iron spiked ferules, heads of javelins and arrows, double-edged swords, knives, beads for ornaments, potteryware for culinary purposes, exactly similar in pattern to those that are described by Mr. Wright, in a paper on 'Fausset Antiquities,' which he read before the British Association at Liverpool, in 1856, and which antiquities I need scarcely tell you were excavated at Canterbury, as well as proved to have been used in this country before the introduction of Christianity to our shores. Even the cowrie (the shell

As it is the fashion to quote *Cowper on the Negro* in anthropological discussions, I append his translation of the above, which although feeble, yet conveys the spirit of the original.

"From Afric she, the swain's sole serving maid,
Whose face and form alike her birth betrayed;
With woolly locks, lips tumid, sable skin,
Wide bosom, udders flaccid, belly thin,
Legs slender, broad and most misshapen feet,
Chapped into chinks, and parched with solar heat."

* *Crania Ægyptiaca.* Philadelphia, 1844 (eighth conclusion).

† *Transactions of the Ethn. Soc.*, vol. i, new series, p. 328.

of the *Cyprœa moneta*), which is described in Mr. Wright's paper as having been found among other relics of our Anglo-Saxon forefathers, is in this very day the currency among the Filatahs. It may perhaps increase the interest of my statement, which can be demonstrated by the articles I brought home (being deposited at the Royal Institution museum at Liverpool), when I add that they were obtained from tribes who had no record of ever having been visited by any white man previous to the time of our voyage at the end of 1854."

There is good reason to believe that, as among all inferior races, there has been little or no migration from Africa since the earliest historical records. The European, for ever restless, has migrated to all parts of the world, and traces of him are to be found in every quarter of the globe. Everywhere we see the European as the conqueror and the dominant race, and no amount of education will ever alter the decrees of Nature's laws.

We hear much of late in this country of the equality of the Negro and European, because we have little real knowledge of the Negro; but in America the Negro is better known. As Dr. Van Evrie observes:* "In the United States, among a people almost universally educated, and where the fact of 'equality' is almost universally understood and acted on, personally as well as politically, the advocacy of woman's 'equality,' in the sense that they (in England) argue it, or 'equality' of the Negro to the white man in any sense whatever, is inexcusable on the ground of ignorance; and those thus warring against the laws of nature and progress of society, deserve to be treated as its enemies, or as absolute maniacs, and irresponsible for the evils they seek to inflict upon it."

It has been assumed on very insufficient evidence that the Negroes in America improve in intelligence in every generation, and that they gradually approach the European type. M. Quatrefages recently directed our attention to this point, as did Sir Charles Lyell many years ago. It is affirmed that the head and body also approach the European without any mixture of the races.

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* *Negroes and "Negro Slavery."* New York, 1861, p. 10.

M. Quatrefages quotes the following* from M. Elisée Reclus: "We do not intend here to touch upon the question of slavery, we would merely state a certain fact—the constant advance of Negroes in the social scale. Even in physical respects they tend gradually to approach their masters; the Negroes of the United States have no longer the same type as the African Negroes; their skin is rarely of velvet black, though nearly all their progenitors have been imported from the Coast of Guinea; their cheekbones are less prominent, their lips not so thick, nor the nose so flattened, neither is the hair so crisp, the physiognomy so brutish, the facial angle so acute as those of their brethren in the old world. In the space of one hundred and fifty years they have, as far as external appearance goes, passed one-fourth of the gulph which separates them from the white race." I cannot assent to this, as I believe that no improvement takes place after the second generation.

On this point Dr. Nott† has very judiciously observed: "Sir C. Lyell, in common with tourists less eminent, but on this question not less misinformed, has somewhere stated that the Negroes in America are undergoing a manifest improvement in their physical type. He has no doubt that they will, in time, show a development in skull and intellect quite equal to the whites. This unscientific assertion is disproved by the cranial measurements of Dr. Morton. That Negroes imported into, or born in, the United States become more intelligent and better developed in their physique generally than their native compatriots of Africa, every one will admit; but such intelligence is easily explained by their ceaseless contact with the whites, from whom they derive much instruction; and such physical improvement may also be readily accounted for by the increased comforts with which they are supplied. In Africa, owing to their natural improvidence, the Negroes are more frequently than not a half-starved, and therefore half-developed, race; but when they are regularly and adequately fed, they become healthier, better developed, and more humanised. Wild horses, cattle, asses, and other brutes are greatly im-

* *Unité de l'Espèce Humaine.* Paris, 1861.
† *Types of Mankind.* Philadelphia, 1857, p. 260.

proved in like manner by domestication; but neither climate nor food can transmute an ass into a horse, or a buffalo into an ox."

The real facts seem to be, that the Negroes employed in domestic labour have more intelligence than those who are employed at field labour, who are nearly in the same mental condition as when they left Africa. We must bear in mind, however, that there are only some of the African tribes of Negroes who are docile and intelligent enough for domestic purposes: the Eboes are generally selected for this purpose. We see therefore in this improvement of the Negro simply the effect of education, but not of climate or other physical agents. We fully admit that the domestic Negroes are improved in intelligence in America, resulting from the imitation of the superior race by which they are surrounded; but much of the improvement in intellect is owing to the mixture of European and Negro blood. The Negro is not generally educated because it is affirmed that he is no sooner taught to read than he will take every chance of reading his master's letters; and if he be taught to write, he will soon learn to forge his master's signature. This applies with equal, and, perhaps, greater force to those free, semi-civilised Negroes who are held by some in such theoretical veneration.

I have intentionally avoided dwelling on the great diversity of physical type found in Africa, as this is foreign to our subject. There can be no doubt, however, that there is, both in North and South Africa every shade of colour and races with very different features. There are also in Central Africa some races such as the Mandingos, Fulahs, and Wolofs, who are quite distinct from the typical Negro. In these races, some of the characters found in the typical Negro are found in only a very modified degree. How many races inhabit Africa, and their relation to one another, is not the subject of present inquiry. M. Pruner Bey has very judiciously made the following observations on this point:—

"We must admit that the inferior orbital margins are frequently narrow and retreating; that the noses become longer and more prominent; that the lips turned up in some tribes

are only full in others; that prognathism diminishes without however disappearing entirely; that the aperture of the eye becomes wide; that the hair short and woolly in most, grows longer; that the transverse diameter of the chest becomes enlarged; that even the pelvis, though much more rarely, acquires more rounded outlines; that the limbs acquire more harmonious proportions; that the hips, thighs, and legs become more fleshy and the foot more arched; but as regards the crowning of the work, *i.e.*, the skull, especially the cerebrum, all the variations in the Negro race remain confined within limits which deserve our attention. In the Aryan race the skull presents three fundamental types, the elongated form (producing in some exceptional cases prognathism) which approaches the limit of the Negro type; the short and round form, approaching the Turanian race; and finally, the typically beautiful oval form, which seems to have resulted from a combination of the two former. Nothing like it is to be found in the Negro. The skull is and remains elongated, it is elliptical, cuneiform, but never round; his facial bones may approach the pyramidal form by the increasing distance between the cheekbones, and may in this respect resemble the Kaffirs and the Bechuanas, but this is all." This generalisation appears to me to be in accordance with all the known facts respecting the craniological development of the chief African tribes, which thus form one great ethnic family, although composed of many distinct races.

I need not enlarge on the well-known and admitted facts respecting the intense immorality which exists amongst the Mulattoes and others of mixed blood.* There are, at the same

* The following extract is a striking confirmation of this remark:—"But the worst class of all is the mulatto—under which I include quadroon and octaroon. He is everywhere, like wealth, irritamenta malorum. The 'bar-sinister,' and the uneasy idea that he is despised, naturally fill him with ineffable bile and bitterness. Inferior in point of morale to Europeans, as far as regards physique to Africans, he seeks strength in making the families of his progenitors fall out. Many such men visiting England are received by virtue of their woolly hair and yellow skin into a class that would reject a fellow-countryman of similar, nay of far higher, position; and there are amongst them infamous characters, who are not found out till too late. London is fast learning to distinguish between the Asiatic Mir and the Munshi. The real African, however—so enduring are the sentimentalisms of Wilberforce and Buxton—is still to be understood."—*Wanderings in West*

time, perhaps, some exceptions to this general rule, which, however, has been observed in every country where these people exist.

Of all the questions connected with the Negro, the most difficult to settle is that of his intelligence. Amidst conflicting testimony, it is difficult to discover the truth. We may ad-

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Africa. 1863. Vol. i. p. 271. This is by no means a modern idea, for I find the following extract from a work entitled "A new voyage to Guinea," by William Smith, Esq., appointed by the Royal African Company to survey their settlements, make discoveries, &c., in a second edition published in 1745, p. 213. Speaking of the Mulattoes of the Gold Coast at that time, this author observes: "Upon this coast are a Sort of People called MULLATOES, a race begotten by the *Europeans* upon *Negroe* Women. This Bastard Blood is a Parcel of the most profligate Villains, neither true to the *Negroes*, nor to one another; yet they assume the Name of Christians, but are indeed as great Idolators as any on the Coast. Most of the Women are public Whores to the *Europeans*, and private ones to the *Negroes*. In short, whatever is bad among the *Europeans* or Negroes are united in them; so that they are the Sink of both. They are frightfully ugly, when they grow in Years, especially the women." There is, however, an earlier description of these peoples from which the author seems to have partly borrowed his ideas. Nearly the same words are given in William Bosman's work on Guinea, published at the end of the 17th century. Is not this picture true of Mulattoes as a class all over the world? Bosman says (*Loc. Cit.* 141):—"Though I have been tedious in this, I hope you will pardon it; for I must own my Itch of Scribbling is not yet over, and I cannot help giving you an account of a wonderful an extraordinary sort of People, I mean the *Tapayers* or *Mulattoes;* a race begotten by the *Europeans* upon the *Negro* or *Mulatto*-Women. This Bastard Strain is made up of a parcel of profligate Villains, neither true to the *Negroes* nor us, nor indeed dare they trust one another; so that you very rarely see them agree together. They assume the Name of Christians, but are as great Idolators as the *Negroes* themselves. Most of the Women are public Whores to the *Europeans* and private ones to the *Negroes*, so that I can hardly give them a character so bad as they deserve. I can only tell you whatever is in its own Nature worst, in the *Europeans* and *Negroes* is united in them; so that they are the sink of both. The Men, most of which are Soldiers in our service, are clothed as we are; but the Women prink up themselves in a particular manner: Those of any Fashion wear a fine Shift, and over that a short Jacket of silk or stuff, without sleeves; which reaches from under the arms to their hips, fastened only at the shoulders. Upon their heads they wear several caps, one upon the other; the uppermost of which is of Silk, plated before and round at the top, to make it fit soft, upon all which they have a sort of Fillet, which comes twice or thrice around the Head. Thus dressed they make no small show. On the lower part of their body they are clothed as the *Negro*-Women are; and those who are poor are only distinguishable by their dress: they going naked in the upper part of their body.

"The whole Brood, when young, are far from handsome, and when old, are only fit to fright children to their beds. If a painter were obliged to paint Envy, I could wish him no better original to draw after than an old *Mulatto*-Woman. In process of time, their Bodies become speckled with white, brown, and yellow spots, like the Tigers, which they also resemble in their barbarous natures. But I shall here leave them, for fear it may be thought that I am prejudiced by hatred against 'em; but so far from that, that there is not a single person who hath anything to do with them but he must own they are not worth speaking to."

mit, however, that there are instances of the pure Negro showing great powers of memory, such as the acquirement of languages; but we must also remember that memory is one of the lowest mental powers. Numerous instances have been collected by different partisan writers to show that the Negro is equal intellectually to the European; but an examination of these cases nearly invariably leads to the conclusion that there has been much exaggeration in the statements made by writers as to the aptitudes of the Negro for education and improvement. The exhibition of cases of intelligent Negroes in the saloons of the fashionable world by so-called "philanthropists"* has frequently been nothing but mere imposture. In nearly every case in which the history of these cases has been investigated, it has been found that these so-called Negroes are the offspring of European and African parents. I propose on some future occasion to lay before you evidence to show, that nearly all the Negroes who are asserted to have arrived at any mental distinction had European blood in their veins: and think I shall be able to show that of the fifteen celebrated Negroes whose histories were collected by Abbé Gregoire there is not one who is of pure Negro blood. Some writers who advocate the specific difference of the Negro from the European have very injudiciously admitted that occasionally the Negro is equal in intellect to the European, but this admission has materially

* The following words of Thomas Carlyle deserve to be recorded in every discussion on the Negro:—"Sunk in deep froth oceans of 'Benevolence,' 'Fraternity,' 'Emancipation-principle,' 'Christian Philanthropy,' and other most amiable looking, but most baseless, and in the end baleful and all-bewildering jargon, sad product of a sceptical eighteenth century, and of poor human hearts left destitute of any earnest guidance, and disbelieving that there ever was any, Christian or heathen, and reduced to believe in rosepink sentimentalism alone, and to cultivate the same under its Christian, anti-Christian, broad-brimmed, Brutus-headed, and other forms—has not the human species gone strange roads during that period? And poor Exeter Hall, cultivating the broad-brimmed form of Christian sentimentalism and long talking, and bleating and braying in that strain, has it not worked out results? Our West India legislatings, with their spoutings, anti-spoutings, and interminable jangle and babble; our twenty millions down on the nail for blacks of our own; thirty gradual millions more, and many brave British lives to boot, in watching blacks of other people's; and now, at last, our ruined sugar estates, differential sugar duties, 'immigration loan,' and beautiful blacks sitting there up to the ears in pumpkins, and doleful whites sitting here without potatoes to eat; never, till now, I think, did the sun look down on such a jumble of human nonsenses."

weakened their argument in favour of a specific difference. If this be so, let me ask those who hold such an opinion to give the name of one pure Negro who has ever distinguished himself as a man of science, as an author, a statesman, a warrior, a poet, an artist. Surely, if there is equality in the mental development of human races, some one instance can be quoted. From all the evidence we have examined, we see no reason to believe that the pure Negro even advances further in intellect than an intelligent European boy of fourteen years of age. Many writers have mentioned the precocity of the Negro children. Sir C. Lyell has observed:* "Up to fourteen years of age black children advance as fast as the whites;" and Eliot Warburton has remarked† that the modern Egyptian "when young, is remarkably precocious in intellect, and learns with facility. As he grows up, his intelligence seems to be dulled or diminished: he has no genius for discovery, and though apt in acquiring rudiments, he is incapable of generalising. He fills subordinate departments well, but appears incapable of taking or of keeping a lead." Sir C. Lyell expresses his surprise at the results of the mixture of some European blood with the Negro, and thinks "it a wonderful fact, psychologically considered, that we should be able to trace the phenomena of hybridity even into the world of intellect and reason." It would, indeed, be remarkable if all men were endowed with the same instincts; but not so wonderful if we do not accept such an unfounded hypothesis. The pure Negro seems incapable of much mental cultivation; and Archbishop Sumner's much-talked-of "improveable reason," as a distinction between men and animals, only finds a limited application in the Negro race. The reason of animals is improved to some extent by domestication and training, and this is all we can say of the Negro. Dr. Madden observes: "It will be seen by all the answers the missionary gentlemen in our different settlements have given to my queries respecting the mental capacity of Negro children, that they are considered universally, in that respect, equal to European children, and by some even quicker, in their percep-

* *Second Journey to the United States*, vol. i, p. 105.
† *The Crescent and the Cross.*

tions, and more lively in their powers of apprehension." To which Dr. R. Clarke adds:* "This is observable from the ages of five to twelve or thirteen years; but from that period of life to the age of eighteen or twenty, it becomes less strongly marked, and there appears to be less activity in the mental faculties."

Professor Owen gives it as his opinion† that we are unable "to appreciate or conceive of the distinction between the psychical phenomena of a Chimpanzee and of a Bosjesman, or of an Aztec with arrested brain growth;" but we are able clearly to appreciate the psychological distinction between the Negro and the Chimpanzee: just as we see that there are decided mental and moral distinctions between the European and the Negro. We fully admit, however, that the psychical distinction is simply a question of degree and not of kind.

The day is not far distant when we shall be able to analyse the mental character of the Negro far more minutely than we can do in the present infant state of psychological science.‡ In

* *Sierra Leone*, p. 34.

† *Journal of the Proceedings of the Linnean Society of London*, 1857, p. 20.

‡ Pruner-Bey thus speaks of the Psychology of the Negro:—"The manifestations of the affective and intellectual faculties of the Negro may be placed in parallel with his physical type. Sensuality is the great lever of his propensities; from his imitative talent result the qualities which demand our esteem. The first renders him an eminently sociable being; by the second he becomes an artist of a secondary rank. Solitude is insupportable to him; song and dance are indispensable wants. Materialist in the main, he is in this respect below the more refined Chinese; but, like the latter, he prefers suicide to great privations. He preferentially selects the most violent means to attain this object; he suffocates himself by reversing his tongue towards the larynx; he throws himself from precipices; he drowns himself. He rarely takes the initiative in anything. In spiritual things he reproduces, but is not productive. It was only after having acquired the knowledge of the existence of letters among other peoples that an individual of the Vei tribe invented an alphabetic primer, the greatest effort which the Negro has ever made in the cultivation of science. The eminently imitative nature of the Negro even reveals itself in that part in which the creative faculty of every race reflects itself; viz., language. It appears to me evident that the Negro in the structure of his languages has endeavoured to produce a copy of all the systems known without attaining the perfection of any original. The same remark applies to the ideas and conceptions referring to regions of the invisible world, towards which the human mind at all times, and in all regions, soared to attempt the solution of the highest problems. The adoration of natural objects, of stones, trees, &c., of the sun, as well of the names of ancestors, demonology, the attribution of superior powers to objects made by the hand of man, divination by the inspection of entrails, human sacrifices, and anthropophagy,—for a mystical object all this found its place in the soul of the Negro, as amongst us in times past; but he surpasses the Semitic, the Aryan, and even the Chinese, in having completely forgotten

dwelling on the mental character of the Negro we must, therefore, for the present, rely on the general observations of those

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the signification of the symbol. For him animals would speak the language of man if they were not too lazy. He has probably invented the fable, in approaching by the excess of his instincts, the brute to man. It is specially south of the Equator that the Negro is heavily enchained by a fatal superstition. Living in continued fear of being bewitched, the simple suspicion of it induces him to immolate hecatombs of innocents. The *Judgment of God* of the ancient gallants of the North of Europe is not unknown to him, but he prefers poison for the ordeal of suspected persons. Moreover, the Negro takes the world as he finds it, and he neither imagines a system of cosmogony nor any spiritual theory on the attributes of a superior being. On the other hand, he readily accepts Islamism, and he probably would never oppose to the introduction of the sublime doctrine of fraternal love that desperate resistance shown by the ancient Saxons and Scandinavians.

"Another point in the psychology of the Negro remains to be examined, and it is not the least important one. I would speak of the facility with which he loses his equilibrium when passing from one extreme to the other, frequently without any appreciable motive, of that contradiction in which he presents himself in his social relations, and the excesses of which he is capable. Patient towards a master who illtreats him, he assassinates one who has cherished him. Defending his cabin with ferocious obstinacy, he would sell his children for a piece of stuff. A kneeling slave before a king of his blood, he would condemn him to death when he is tired of him. 'You please no longer men or women, old men or children, sheep or fowls,' say the Negroes of the Sudan to their Sultan, to signify to him that it is time he should execute himself. Caring little about the chastity of his daughters, and prostituting his slaves, the Negro assures himself during his absence of the fidelity of his wife by mechanical means, and he becomes an assassin on the mere suspicion of her adultery. Nevertheless, the Negress has more liberty than Islam women, and she is respected in war. Abusing the weaker sex, and deprecating her even by the difference of aliments which he gives her, he nevertheless accepts a woman as his sovereign, according prerogatives to the Queen-mother, and regulating the rights of succession as the peoples of Asia who live in a state of polyandry. A mutual exchange of the occupations of the two sexes is not rare, even among the Negroes of the Sudan. The women cultivate the soil, and the man spins cotton; he guards the fields, she goes to war. The same contradiction is observed in other things which touch the interest of the Negro. Particularly anxious about the arrangements of the interior of his cabin, he remains naked outside in the heat of the day and the comparatively excessive cold of the night. Very domestic and attached to the soil, the Negro travels over the great continent from one end to the other, either for traffic or to fulfil some religious duties. Whole nations are continually on the move, and gipsies would find their brothers among the Negro race.

"The Negro is not cruel by nature; he remains as far in this respect from the bloody refinement of the Chinese as from the atrocious proceedings of the Aryan Persians. Still the dynasties of Wadai blind their nearest male relations; the despot of the Moluwas mutilates and skins those condemned to death. The civilised Bornoui cuts off the thighs of his war prisoners, and the Mousgous skin the backs of their horses to have a firmer seat. But they do not put their slaves to the plough like some tribes of Touaregs. The punishments inflicted by the Negro on his equals, savour, however, more or less of barbarism."

"Let us not, however, forget that these excesses do not constitute the rule, and that 'the black man is to the white man what woman is to man in general, a loving being and a being of pleasure.' We cite with conviction the words of Golbery, 'the Negro is generally sober, industrious, an excel-

unbiassed travellers and others who have been much associated with the Negro race. In the first place we will see what is the evidence recently published by our English consuls, who have the best opportunities of judging of the character of the people amongst whom they are placed.

Consul Hutchinson, who spent no less than eighteen years on the West coast of Africa, and who is as competent a judge as any man now living, says* that "his own observations on the African tribes tend to show that the African is not exactly the style of 'man and a brother' which mistaken enthusiasts for his civilisation depict him to be." He gives the result of a ten years' attendance at the Missionary school at Cape Palmas of one of his servants, a Kruman, and says that at the end he was asked what he knew of God? He replied: "God be very good; He made two things—one sleep and the other Sunday, when no person had to work."† Consul Hutchinson says that "the thirst for each other's blood, which seems a daily habit amongst so many of the Negro tribes in Western Africa, appears to me to be incompatible with ordinary notions of common humanity." He says that for scores of years European missionaries and English traders have mixed with them in social intercourse,

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lent and patient workman, not wanting skill; he governs his family with sagacity and dignity.' We also subscribe the judgment of Mungo Park, that 'the Negro is compassionate by nature,' and we may add that the Negress is even in a state of slavery capable of the greatest devotion.

"Improvidence they have in common with all human races who live in a more or less primitive state, and pride of the stronger against the weaker is not foreign to the Negro.

"The portrait which L. Magyar traces of the peoples east of Angola is not favourable. The Djambandis, though polite to strangers, are described as suspicious, false, malicious, and thievish; the Djohoes are still worse, specially vicious to strangers. They contrast with the Moluwas, who are full of attention to their guests. Most of the inhabitants of the Lobal are ferocious brigands. The judgment of Mr. Kauffmann on the Negroes of the White Nile is generally not more favourable.

"In social respects the Negro has at least attained the position of shepherd and agriculturist. Besides this some Negro-peoples have founded, independent of all foreign influence, a sort of civilisation and considerable states; they possess the art of metallurgy and the talent for trade to a high degree, and they well know how to profit by the foibles of their masters; their answers, for instance, are always shaped according to the desire of the questioner."

* *Transactions of the Ethnological Society*, vol. i, New Series, p. 327.

† "All missionaries praise the African for his strict observance of the Sabbath. He would have 365 sabbaths in the year if possible, and he would as scrupulously observe them all."—*Wanderings in West Africa*, vol. i, p. 266.

yet they still cling "to their gris-gris, jujus, fetichism and cannibalism with as much pertinacity as they did many hundred years ago." He adds: "Here we have all the appliances of our arts, our science and our Christianity, doing no more good than did the wheat in the parable that was sown amongst the briars and the thorns. To attempt civilising such a race before they are humanised appears to me to be beginning at the wrong end. I have passed many a hour in cogitating and endeavouring to fabricate some sort of education likely to root out the fell spirit that dictates human sacrifices and cannibalism; but I fear years must elapse before any educational principle, in its simplest form, can produce an amendment on temperaments such as they possess."

Consul Burton considers* that M. Du Chaillu's remarks concerning the commercial shrewdness and eagerness, the greediness and rascality of the Negro, apply to him everywhere in his natural state; that an abnormal development of adhesiveness, in popular language a peculiar power of affection, is the brightest spot in the Negro character; as in children, it is somewhat tempered by caprice, especially under excitement, yet it has entitled him to the gratitude of many a traveller. Exaggeration, he considers, is the characteristic of the mind of both the East† and West African. He says that "they justly hold labour as an evil inferior only to death."

These are the opinions which have been published by the

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* *Transactions of the Ethnological Society*, vol. i, New Series, p. 317.

† Captain Burton thus speaks of the Coast clans of Eastern Africa:—"Supersubtle and systematic liars, they deceive where duller men would tell the truth; the lie direct is no insult, and the offensive word 'Muongo,' (liar) enters largely into every dialogue. They lie like Africans, objectlessly, needlessly, when sure of speedy detection: when fact would be more profitable than falsehood; they have not discovered with the civilised knave, that 'honesty is the best policy;' they lie till their fiction becomes subjectively fact. With them the lie is no mental exertion, no exercise of ingenuity, no concealment, nor mere perversion of the truth: it is apparently a local instinctive peculiarity in the complicated madness of poor human nature. The most solemn and religious oaths are with them empty words; they breathe an atmosphere of falsehood, manœuvre and contrivance, wasting about the mere nothings of life—upon a pound of grain or a yard of cloth—ingenuity of iniquity enough to win and keep a crown. And they are treacherous as false; with them the salt has no signification, and gratitude is unknown even by name."—*Lake Regions of Central Africa.* By R. F. Burton. 1861. Vol. i.

last two consuls who have written on the subject, and we shall now examine the evidence of some other witnesses.*

M. Du Chaillu describes the general characteristics of the tribes he visited who spoke the Mpongwe language as far superior to the Negroes of Congo. He says† "the Negroes

* Truthful William Bosman published the following as his opinions respecting the Negroes of Guinea in 1705 (*loc. cit.*, p. 117).

"The Negroes are all, without exception, crafty, villanous and fraudulent, and very seldom to be trusted, being sure to slip no opportunity of cheating an European, nor indeed one another. A man of integrity is as rare among them as a white falcon and their fidelity seldom extends farther than to their masters; and it would be very surprising if, upon a scrutiny into their lives, we should find any of them whose perverse nature would not break out sometimes, for they indeed seem to be born and bred villains. All sorts of baseness having got such sure footing in them, that 'tis impossible to lye concealed; and herein they agree very well with what authors tell us of the Muscovites. These degenerate vices are accompanied with their sisters—Sloth and Idleness, to which they are so prone, that nothing but the utmost necessity can force them to labour. They are besides so incredibly careless and stupid, and are so little concerned at their misfortunes, that 'tis hardly to be observed, by any change in them, whether they have met with any good or ill success."

Mr. J. W. Jackson makes the following observations on the Negro (*Ethnology and Phrenology*, 1863, p. 35):—"The radical defect of the Negro is want of due nervous development. His brain is less in proportion to his body than that of any other grand division of humanity, and as a result, the involuntary and animal functions altogether preponderate. His flat foot, his long heel, his imperfect pelvis, his powerful stomach, his prognathous jaw, his enormous mouth, and his pug nose, are in perfect correspondence with his imperfectly developed brain, in which correspondently passion and affection rule principle and faculty, the basilar and posterior developments being predominant over the coronal and anterior. Except in a few unfavourable instances, however, he does not exist on the continent in his lowest form; for it is the Oceanic Negro who is the almost irreclaimable savage, while the African is the improvable barbarian type of his race. The former is useless even as a slave, while the latter is eminently valuable, because he has been broken to work and obedience, and has that hereditary aptitude for sustained toil, of which the utter savage is so generally devoid. Hence, despite his present degradation, he obviously belongs to the redeemable families of humanity. He is the labourer of the tropics, and is not going to perish out, like a wild Indian, because his buffalo grounds have been enclosed by the white faces. He has his place on the earth which none can take from him, and what we have to attempt is not his extirpation, but improvement. Hence, a study of his character and capabilities is of the utmost importance. From temperament he is slow, but from organisation he is persistent, his lymphatic nature being sustained by a considerable amount of firmness and self-esteem. He is not skilful, his mechanical ingenuity being that of a child; nor is he capable of delicate manipulation, for which his entire organisation is too coarse. His perceptive faculties are stronger than his reflective or imaginative, and he dwells in the real rather than the ideal. He never rises from a fact to a principle, or re-creates beauty from the faultless beau-ideal of artistic conception. He has but little reverence for the past, and no very brilliant anticipation of the future, being from the overwhelming strength of his sensuous nature swallowed up in the present."

† *Transactions of the Ethnological Society*, vol. i, New Series, p. 306.

possess an imaginative mind, are astute speakers, sharp traders, great liars, possessing great powers of dissimulation, and are far from being in many respects the stupid people they are believed to be. In everything that does not require mental labour and forethought, they seemed to me to learn almost as fast as any amongst the more intellectual races to a certain point." He further affirms that they have little power of forethought or power of reflection, and that there is "a total lack of generalisation." He also says, that although these people "are often treacherous, they have noble qualities, given to hospitality, and the women show great kindness of heart, especially when one takes into account the way they are treated."

Brehm* says that "there seems to be a complete absence of moral sentiment amongst the natives of East Sudan, who not merely excuse theft, murder, and treachery, but consider these actions as praiseworthy in man. They first learned under a Turkish ruler to distinguish murder from justifiable homicide in war. Lying and deceitfulness are considered as marks of mental superiority; and those who suffer death on the gallows are buried with the same honours as the rich merchant or the sheik."

Count Görz† narrates of the Negroes in Cuba, "Their character is very degraded; the moral feeling entirely undeveloped; all their actions proceed from animal impulse, or a cunning calculation of their own advantage. Generosity and indulgence exhibited by the white man they consider as weakness. Power imposes upon them, and excites their hatred, which would become dangerous were they not aware of their powerlessness. The only efficacious punishment for them is the whip. They delight in sowing discord; are thievish and revengeful; void of any religious feeling, they are given to the crudest superstition. Their frame, however, is well-developed and powerful; their teeth magnificent:‡ their legs slender; they digest like beasts of prey." This certainly is a

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* *Reise-skizzen aus Nordost-Afrika*, vol. i, pp. 162, 175. 1855.

† *Reise um die Welt (Voyage round the World) in* 1844. Stuttgard, 1853.

‡ Mr. Louis Fraser says—"Their mode of mastication is very peculiar, being more like a monkey than a man."—J. H.

severe judgment, and may be partly explained by the large amount of mixed blood in Cuba.

Colonel Hamilton Smith* thus describes the Negro. "The Negro is habitually dormant, but when roused shows his emotion by great gesticulations regardless of circumstances. War is a passion that excites in them a brutal disregard of human feelings; it entails the deliberate murder of prisoners, and victims are slain to serve the manes of departed chiefs. Even cannibalism is frequent among the tribes of the interior. Notwithstanding the listless torpidity caused by excessive heat, the perceptive faculties of the children are far from contemptible; they have a quick apprehension of the ridiculous, often surpassing the intelligence of the White, and only drop behind them about the twelfth year, when the reflective powers begin to have the ascendancy. Collectively, the untutored Negro mind is confiding and single-hearted, naturally kind and hospitable. Both sexes are easily ruled, and appreciate what is good under the guidance of common justice and prudence. Yet where so much that honours human nature remains in apathy, the typical woolly-haired races have never invented or reasoned out a theological system, discovered an alphabet, framed a grammatical language, nor made the least step in science or art. They have never comprehended what they have learned, or retained a civilisation taught them by contact with more refined nations as soon as that contact had ceased. They have at no time formed great political states, nor commenced a self-evolving civilisation. Conquest with them has been confined to kindred tribes, and produced only slaughter. Even Christianity of more than three centuries' duration in Congo has scarcely excited a progressive civilisation. Thus, even the good qualities given to the Negro by the bounty of nature, have seemed only to make him a slave trodden down by every remorseless foot, and to brand him for ages with the epithet of outcast. The marked, unceasing proof of a curse as old as the origin of society, not even deserving human forbearance, and true it is that the worst slavery is his lot even at home, for he is there exposed to the constant peril of becoming also a victim slaughtered with the most revolting

* *Unity of the Human Species*, p. 190–7.

torments. Tyrant of his blood, he traffics in slavery as it were merchandise, makes war purposely to capture neighbours, and sells even his own wives and children."

Van Amringe observes of the Negro race:* "Even after having lived for centuries with the white people, from whom they have received every possible instruction for the purpose of developing an attribute which would be so serviceable to them, as well as those whom they serve, it is very far from having any virtue for which they are distinguished, or even trusted. The Canaanite (Negro) is indolent, careless, sensual, tyrannical, predatory, sullen, boisterous, and jovial. Such are the specific characteristics, and the sensual relations are founded upon them. It has been a favourite theory with some visionary philanthropists that intermarriages of the different species would be highly favourable to the race; but we have never heard of any of them who was willing to commence the practice in their own families. There is certainly no method that could possibly be devised, which would as certainly and as expeditiously degrade the whole human family as amalgamation. If there is any hope for the improvement of the condition of the dark races, the history of mankind shows it can only be founded upon the preservation of Shemitic (White) species. This is the only species endowed with any power to drag the cumbrous dark races out of the slough in which they have been wallowing for ages."

Burmeister, an excellent observer, says:† "I need not enlarge on the long hands, slender fingers, and flat feet of the African. Any one who has ever visited a menagerie, cannot fail to have observed the long hand, slender fingers, long nails, the flat foot, the deficient calf, and compressed shank and thigh of the apes, which so much resemble in every respect the peculiarities of the Negro. I have often tried to obtain an insight into the mind of the Negro; but it never was worth the trouble; the only available result obtained was, that there is not much mental life in the Negro, and that all his thoughts

* *An Investigation of the Theories of the Natural History of Man.* New York, 1848.

† *R. nach Brasilien.* 1857.

and actions were merely directed to the lowest requirements of human existence. There is something in the Negro like the cunning forwardness of the monkey tribe, which renders any very familiar intercourse, such as we have with an European servant, impossible."

Carl Vogt has recently observed :* "Most of the characters of the Negro viewed externally remind us irresistibly of the ape; the short neck, the long lean limbs, the projecting pendulous belly, all this affords a glimmer of the ape beneath the human envelope, such similitudes are equally detected on examining the structure of individual parts."

Mr. Winwood Reade† says, "It must be acknowledged, that putting all exceptions aside, the women of Africa are very inferior beings. Their very virtues, with their affections and their industry, are those of well trained domestic animals. But if the women of Africa are brutal, the men of Africa are feminine. Their faces are smooth, their breasts are frequently as full as those of European women; their voices are never gruff or deep. Their fingers are long; and they can be very proud of their rosy nails. While the women are nearly always ill-shaped after their girlhood; the men have gracefully moulded limbs, and always are after a feminine type—the arms rounded, the legs elegantly formed, without too much muscular development, and the feet delicate and small." . . . . "A king of Ashanti cut off the hands of a slave, and bade her scratch his head for vermin with the stumps. If any one had accused him of barbarity he would not have understood the accusation. It was his idea of a good practical joke."‡ He continues, "It

* *Vorlesungen über den Menschen (seine Stellung in der Schöpfung und in der Geschichte der Erde)*. Giessen, 1863 (seventh lecture).

† *Savage Africa*, ch. 36.

‡ I know not on what authority Mr. Winwood Reade has made this assertion, but Bosman records a similar case which was perpetrated by *Angua* about A.D. 1691. After recording innumerable cruelties, he goes on to say that one of *Anqua's* slaves touched a new coral belonging to one of his wives, "But *Angua* so resented this innocent freedom, that as soon as I was out of the camp, he caused both wife and slave to be put to death, drinking their blood, as he useth to do those of his enemies. For such another trivial crime, a little before, he had caused the hands of one of his wives to be cut off, after which, in derision, he used to command her to look his head for vermin, which being impossible with her stumps, afforded him no small diversion."—*A New and Accurate Description of the Coast of Guinea*, by William Bosman, translated from the Dutch, 1705, p. 24.

will be understood that the typical Negroes with whom the slavers are supplied, represent the dangerous, the destitute, and the diseased classes of African society. They may be compared to those which in England fill our jails, our workhouses, and our hospitals. So far from being equal to us, the polished inhabitants of Europe, as some ignorant people suppose, they are immeasurably below the Africans themselves. The typical Negro is the true savage of Africa, and I must paint the deformed anatomy of his mind as I have already done that of his body. The typical Negroes dwell in petty tribes where all are equal, except the women, who are slaves; where property is common, and where, consequently, there is no property at all; where one may recognise the Utopia of philosophers, and observe the saddest and basest spectacles which humanity can afford. The typical Negro, unrestrained by moral laws, spends his days in sloth and his nights in debauchery. He smokes haschisch till he stupifies his senses, or falls into convulsions; he drinks palm-wine till he brings on a loathsome disease; he abuses children, and stabs the poor brute of a woman whose hands keep him from starvation, and makes a trade of his own offspring. He swallows up his youth in premature vice; he lingers through a manhood of disease; and his tardy death is hastened by those who no longer care to find him food. Such are the 'men and brothers' for whom their friends claim, not protection, but equality! They do not merit to be called our brethren; but let us call them our children. Let us educate them carefully, and in time we may elevate them; not to our own level—that, I fear, can never be —but to the level of those from whom they have fallen."

This last remark is made in the supposition that the typical Negro is degenerated from some higher African race; but we think such an hypothesis is not warranted by history, archæology, or any well established facts. Mr. Reade's observations and his description does not quite agree with the accountsgenerally given of the Negroes in the Bights or Windward coast. Mr. Reade's terminology is far from satisfactory; all typical Negroes are Africans: but all Africans are not Negroes.

Dr. Van Evrie, of New York, who has paid considerable attention to the character of the Negro, and had ample opportunities for observation, thus describes* the Negro :—"But while the analysis of a single bone or of a single feature of the Negro is thus sufficient to demonstrate the specific character, or to show the diversity of race, that great fact is still more obviously and with equal certainty revealed in the form, attitude, and other external qualities. The Negro is incapable of an erect or direct perpendicular posture. The general structure of his limbs, the form of the pelvis, the spine, the way the head is set on the shoulders, in short, the *tout ensemble* of the anatomical formation forbids an erect position. But while the whole structure is thus adapted to a slightly stooping posture, the head would seem to be the most important agency; for with any other head, or the head of any other race, it would be impossible to retain an upright position at all. But with the broad forehead and small cerebellum of the white man, it is perfectly obvious that the Negro would no longer possess a centre of gravity; and therefore, those philanthropic people who would 'educate' him into intellectual equality, or change the mental organism of the Negro, would simply render him incapable of standing on his feet, or of an upright position, on any terms. Everyone must have remarked this peculiarity in the form and attitude of the Negro. His head is thrown upwards and backwards, showing a certain though remote approximation to the quadrumana, both in its actual formation and the manner in which it is set on his shoulders. The narrow forehead and small cerebrum—the centre of the intellectual powers, and the projection of the posterior portion,—the centre of the animal functions, render the Negro head radically and widely different from that of the white man. Thus an anatomist, with the Negro and ourang-outang before him, after a careful comparison, would say, perhaps, that Nature herself had been puzzled where to place them, and had finally compromised the matter by giving them an exactly equal inclination to the form and attitude of each other."

Dr. Louis Büchner† has drawn a most graphic picture of

* *On Negroes and Negro Slavery*, p. 93-4-7. 1861.

† *Kraft und Stoff:* Force and Matter. Seventh edition.

some of the physical characters of the Negro:—"An uninterrupted series of the most various transitions and analogies connect the animal world, from the lowest to the highest. Even man, who in his spiritual pride deems himself elevated above the animal creation, is far from forming an exception to this rule. The Ethiopian race connects him by a number of the most striking analogies with the animal world. The long arms, the form of the foot, the thin calf, the long small hands, the general leanness, the undeveloped nose, the projecting jaw, the low receding forehead, the small head, the narrow pelvis, the pendulous belly, the deficient beard, the colour of the skin, the disgusting odour, the uncleanliness, the grimaces in talking, the shrieking voice, are the many marks which manifestly exhibit the most decided approach of the Negro to the ape. That he also resembles him in his intellectual capacity, is sufficiently known and established by the best observers."

M. Pruner Bey, one of the most eminent of living Anthropologists, has written the most complete memoir on the Negro yet published on this subject.* Many years ago he thus expressed himself† respecting the psychological character of the Negro:—"The capacity of the Negro is limited to imitation. The prevailing impulse is for sensuality and rest. No sooner are the physical wants satisfied, than all psychical efforts cease, and the body abandons itself to sexual gratification and rest. The family relations are weak; the husband or father is quite careless. Jealousy has only carnal motives, and the fidelity of the female is secured by mechanical contrivances. Drunkenness, gambling, sexual gratification, and ornamentation of the body, are the most powerful levers in the life of the Negro. The whole industry is limited to ornaments. Instead of clothing himself he ornaments his body. Like certain animals, the Negro seems apathetic under pain. The explosions of passion

* By the kind permission of the Council, I have been able to print nearly the whole of his last Memoir on the Negro. Some portions are quoted in the text, other parts will be found in copious notes, and I have only omitted the introduction which is merely descriptive of the different African races. Feeling sure that Anthropologists will duly estimate the great value of his Treatise on the Negro, I am proud to be the means of Dr. Pruner-Bey's labours being made generally known to the English public.

† *Ægypten's Naturgeschichte.* Erlangen, 1847.

occur when least expected, but are not lasting. The temperament of the Negro has been called choleric, but it is only so to a certain extent. It is a momentary ebullition, followed instantly by perfect apathy. Life has for the Negro no longer any value when he cannot supply the physical wants; he never resists by increased activity, but prefers to die in a state of apathy, or he commits suicide. The Negro has no love for war; he is only driven to it by hunger. War, from passion or destructiveness, is unknown to him." This is a sufficiently clear and truthful picture, and the following summary, with which M. Pruner Bey concluded his paper, presented to the Paris Anthropological Society, is equally to be commended for

* M. Pruner-Bey also says: "It results from the examination of the organization of the Negro, that it is admirably adapted to the geographical position he occupies. The dark layer in his external integument, and its velvety character, like all blackened and rough bodies, favour the radiation of heat, and act as coolers. Experience has proved that black crape protects also the face from the solar reflection in the ascent of snow-covered mountains. The great development of the glandular system of the skin favours the secretions, refreshing the skin, and protecting it by an unctuous secretion. The thickness of all the layers of the skin protects the Negro from the night frost in his usual condition of nudity. The same considerations apply to the internal integument; the mucous membrane, with its glutinous and abundant secretion; and to all glands, without exception, which by their really enormous volume, in harmony with the excitation by heat, favour and facilitate the change, and the reproduction of organic matter so rapidly used up in the torrid zone. Do we pass beyond the limits of science, and lose ourselves in the vicious circle of teleology, if we venture to suppose that even the infantile form of the brain of the Negro may have its relative advantages? What has the noble Hindoo become under an Indian sun, drowned in a sea of spiritualism the most obscure, with his cranium, which by its admirable harmony, its graceful mould, seems exactly to resemble the organic egg which received the Divine breath of Brahma? He has, it is true, fulfilled an eminent task; but for many centuries he has been a being severed from terrestrial regions, and of little use to his fellow beings. Let us, finally, endeavour to assign to the Negro his place in relation to the quadrumana, to which some authors seriously approximate him, and to that of other human races, which either make use of or despise the Negro. As for me, the moment that an organised being uses for standing and motion that admirable pedestal, the narrow base of which supports an enormous weight; the moment he makes use of the instrument of instruments—the hand; when he expresses his sentiments, his thoughts, his fears, and hopes by speech, I look upon it as a new order of things. While recognising the undoubted value of homologies, which form the bases of zoological science, I cannot but admire the simplicity of the means employed by creative wisdom to separate man from the anthropomorphous ape. The hair on the skin is reduced; a suture is suppressed to draw the teeth closer, and, though prognathism is developed, the lips are thickened; the iliac bones are turned aside instead of being adossed to the vertebral column; the muscles of the thumb are strengthened; the great toe is fixed; nature finally, instead of the temporal lobe, selects the anterior lobe of the brain "there to fashion the instrument of intelligence which reflects her image." (Gratiolet.)

its truth and moderation. "The Negro has always appeared to me as partaking of the nature both of the child and the old man. Anatomists worthy of our confidence—Jacquart, Serres, and Huschke—have, in this sense, interpreted the details of the anatomy of the Negro. The elongated form of the cranium, the proportions of the cerebral lobes and their respective forms, the prominence of the inferior border of the orbits, the flattened nose, the rounded larynx, the less marked curves of the vertebral column, the lateral compression of the thorax and pelvis, with the vertical direction of the iliac bones, the elongated neck of the uterus, the proportion of the parts composing the extremities, the relative simplicity of the cerebral convolutions, etc., are characteristic features of the Negro race, which are found in the fœtus or the infant of the Aryan race, in the different periods of development. The propensity for amusements, for physical enjoyments, for imitation, and the inconstancy of affection, are the appanage of the Negro as well as of our children. The flexuosity of the arteries, the flattening of the cornea, the weakness of the muscles, the dragging walk, and the early obliteration of the cranial sutures, the obstinacy and love of repose are met with in the Negro as in our aged men. In short, the great curve of human development, and its backward direction, appears to be sufficiently extended to appreciate the differences characterising the Negro race as opposed to our race, always taking in account the differential characters resulting from adaptation to external conditions. If our interpretation leaves open many gaps, the future may fill them up, perhaps, in the same sense. If, finally, the Negro, speaking always figuratively, partakes of the nature of the ape, it must still be admitted that it is not the most ferocious, malicious, nor the most pernicious, but rather the most patient, and frequently the most useful animal. In any case, an honourable mediocrity is his inheritance."

The general deductions we would desire to make are:—1 That there is as good reason for classifying the Negro as a distinct species from the European, as there is for making the ass a distinct species from the zebra; and if, in classification, we take intelligence into consideration, there is a far

greater difference between the Negro and European than between the gorilla and chimpanzee. 2. That the analogies are far more numerous between the Negro and the ape, than between the European and the ape. 3. That the Negro is inferior intellectually to the European. 4. That the Negro becomes more humanised when in his natural subordination to the European than under any other circumstances. 5. That the Negro race can only be humanised and civilised by Europeans. 6. That European civilisation is not suited to the Negro's requirements or character.

No man who thoroughly investigates with an unbiassed mind, can doubt, that the Negro belongs to a distinct type. The term species, in the present state of science, is not satisfactory; but we may safely say that there is in the Negro that assemblage of evidence which would, *ipso facto*, induce an unbiassed observer to make the European and Negro two distinct types of man.

The facts I have quoted are, I believe, sufficient to establish that the Negro is intellectually inferior to the European, and that the analogies are far more numerous between the ape and Negro than between the ape and the European.

We shall not enter at length into the three last propositions. Suffice it to say, that no subject needs more attention at the present time than the position which the Negro race is fitted to hold in Nature. I have said it devolves on the student of the Science of Man to assign to each race the position which it shall hold. This is truly a momentous and most difficult problem, but one which science must not evade. As the student of mechanical science has given to the world his inductions and discoveries, so must the student of the Science of Man endeavour to deduce from actual facts principles of guidance for the relations of one race of Man to another.

It is painful to reflect on the misery which has been inflicted on the Negro race, from the prevailing ignorance of Anthropological Science, especially as regards the great question of race. By our ignorance* of the wants and aspirations of the Negro, and

* Dr. Van Evrie makes the following remarks respecting the imperfect accounts we have continually received of the Negro. He says (page 49):

by a mistaken theory respecting his origin, this country has been the means of inflicting a prodigious, and, at present, totally unknown amount of mischief on these people. Our Bristol and Liverpool merchants, perhaps, helped to benefit the race when they transplanted some of them to America; and our mistaken legislature has done the Negro race much injury by their absurd and unwarrantable attempts to prevent Africa from exporting her worthless or surplus population. All this has been done on the theoretical assumption of a mental equality of the different races or species of Man. In an attempt to benefit the Negro we have brought on him endless misery, and rendered some of the most beautiful and productive islands in the world of little more use to humanity at large, than they were before their discovery by Columbus.* But men wedded to a theory become blind to all facts, and will learn nothing from experience. All the millions of money which have been spent, and which expenditure has inflicted great hardships on our own working classes, might have been saved had we taken the trouble to investigate the character of the Negro race.

"African travellers, explorers, missionaries, &c., ignorant of the ethnology, of the physiology, of the true nature of the Negro, and moreover bitten by modern philanthropy, a disease more loathsome and fatal to the moral, than small-pox or plague to the physical nature, have been bewildered, and perverted, and rendered unfit for truthful observation or useful discovery, before they set foot on its soil or felt a single flush of its burning sun. With the monstrous conception that the Negro was a being like themselves, with the same instincts, wants, &c., the same (latent) mental capacities, all they saw, felt, or reasoned upon in Africa, was seen through this false medium, and therefore of little or no value."

* "I cannot avoid repeating that Hayti must not be held up as an example of what can be accomplished by free labour; but that it ought rather to be the beacon to warn the government of England against an experiment which may prove absolutely fatal to her colonial system. If it be not wished that a fate similar to that which has befallen Hayti should overtake our colonies, that they should be rendered wholly unproductive to the revenue of the country, and that the property invested in them should be preserved from destruction, the advisers of the Crown must pause before they listen to the ill-judged suggestions of enthusiasts; for they must banish from their minds the idea that the work of cultivation can be made productive by means of free labour. Such a thing appears to me impossible. The Negro, constituted as he is, has such an aversion to labour, and so great a propensity for indulgence and vice, that no prospect of advantage can stimulate him; and as for emulation it has not the slightest influence over him. Without force he will sink into a lethargy, and revert to his primitive savage character, and the only feasible and effectual plan to promote his civilisation is to persist in those measures which compel him to labour, inculcate morality, and tend to extirpate those vices which are inherent in the descendants of the African race."—*Franklin on the Present State of Hayti.*

Scientific men have yet to do their duty in showing what are the facts.

It may be said that some of the propositions I have advanced are in favour of the slave trade. Such, however, is not my own interpretation of these propositions. No one can be more conscious of the horrors of the "slave trade" as conducted at this time. Nothing can be worse for Africa generally than the continual capture of innocent men and women by brutal Europeans. Few things can be more horrible than the manner in which it is attempted to carry these people across the Atlantic. Nay, more, nothing can be more unjust than to sell any man, woman, or child, into "slavery", as understood by the Greeks and Romans, where the life of the slave was absolutely at the disposal of the master whenever his caprice or fancy thought fit to take it. We protest against being put forward as advocating such views.

But while I say this, I cannot shut my eyes to the fact that slavery as understood by the ancients does not exist out of Africa,* and that the highest type of the Negro race is at present to be found in the Confederate States of America. Far superior in intelligence and physique to both his brethren in Africa and to his "free" brethren in the Federal States, nowhere does the Negro attain to such a long life as in the Confederate States; and this law formerly obtained in the West

* "No man maltreats his wild brother so much as the so-called civilised Negro. He hardly ever addresses his Kruman except by 'you jackass!' and tells him ten times a day that he considers such fellows as the dirt beneath his feet. Consequently he is hated and despised withal, as being of the same colour as, whilst assuming such excessive superiority over, his former equals. No one, also, is more hopeless about the civilisation of Africa than the semi-civilised African returning to the 'home of his fathers.' One feels how hard has been his own struggle to emerge from barbarism. He acknowledges in his own case a selection of species, and he sees no end to the centuries before there can be a nation equal even to himself. Yet in England, and in books, he will cry up the majesty of African kings; he will give the people whom he thoroughly despises a thousand grand gifts of morals and industry, and extenuate, or rather ignore, all their faults and short-comings. I have heard a Negro assert, with the unblushing effrontery which animates a Negro speechifying in Exeter Hall, or before some learned society, that, for instance, at Lagos—a den of thieves—theft is unknown, and that men leave their money with impunity in the storehouse, or in the highway. After which he goes home, 'tongue in cheek,' despising the facility with which an Englishman and his money are parted."—*Wanderings in West Africa*, vol. i. p. 209.

India Islands before our mistaken interference. Nowhere does the Negro character shine so brightly as it does in his childish and fond attachment to his master and his family. The Negro cares far more for his master and mistress than he does for his own children after they are a few years old. I by no means join in that indiscriminate abuse of the Negro character which has been indulged in, especially by those who have only seen the Negro in his savage state, or the "emancipated" (from work?) in the West India Islands. On the contrary, there is much that is to be admired, and more that is useful in the Negro when properly and kindly treated. Brutal masters there are in every part of the world: but we must not found a law on exceptions. Scientific men, therefore, dare not close their eyes to the clear facts, as to the improvement in mind and body, as well as the general happiness, which is seen in those parts of the world in which the Negro is working in his natural subordination* to the European. In some respects, the Negro is certainly not only not inferior, but even far superior to the European. If, for instance, the European were alone in the Confederate States of America, these fertile regions would soon become a barren waste. The Negro is there able to work with impunity, and does himself and the world generally much good by his labour.† Occupations and diseases which are fatal to the

* "Of late, it has become the fashion for the missionary and the lecturer to deny, in the presence of Exeter Hall, the African's recognition of the European's superiority. "The white man," writes Mr. Robert Campbell, a mulatto, "who supposes himself respected in Africa because he is white, is grievously mistaken." I distinctly assert the reverse, and every one who has studied the natural history of man, must have the same opinion. The same egregious nonsense was once propounded before the Ethnological Society—where with some ethnology there is no anthropology—by another "African". And yet the propounder, the late Mr. Consular Agent Hansen, whose death, by the bye, was an honour, and the only honour, to his life, had shaved his wool, and at the time was wearing a wig of coal-black hair, like a Cherokee's. Is imitation no sign of deference?"—*Wanderings in Western Africa*, vol. i. p. 269.

† Again, I would call attention to the noble words of Thomas Carlyle. Speaking of labour, he well says: "The thing must be done everywhere; must is the word. Only it is so terribly difficult to do, and will take generations yet, this of getting our rich European white men 'set to work!' But yours in the West Indies, my obscure black friends, your work, and the getting of you set to it, is a simple affair; and by diligence, the West Indian legislatures, and royal governors, setting their faces fairly to the problem, will get it done. You are not 'slaves' now; nor, do I wish, if it can be avoided, to see you slaves again; but decidedly you will have to be servants to those that are born wiser than you, that are born lords of you—servants to

Europeans, are quite harmless to the Negro. By their juxtaposition in this part of the world, they confer a material benefit on each other.

But it may be asked, "Why remove the Negro from his own country?" "Why not humanise him in Africa?" No doubt this sounds very plausible, and no pains should be spared to introduce every possible humanising influence into Africa. There is little doubt that the African is much easier humanised out of his native land away from all his savage associations; but this need not prevent us from doing all we can towards civilising him in his own country.

It has been affirmed on the best authority (although frequently denied) that domestic slaves are only sold in Africa for some crime. No one, we presume, will dare assert that there are no criminals in Africa! What shall we do with our criminals may be a problem which is occupying the attention of the political economist of Africa—like his Majesty the King of Dahomey—as well as the government of Great Britain. Is Africa not to be allowed to export her criminals, or are they so worthless and unmanageable that no people will have them? What is to be done with unruly or criminal slaves? as a king of Old Calabar said,* "You bind me down not to sell them, tell me it is wrong to kill them! What must I do with them? I will *give you some, and then you won't take them!*"

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the whites, if they are (as what mortal can doubt they are?) born wiser than you. That, you may depend on it, my obscure black friends, is and was always the law of the world, for you and for all men; to be servants, the more foolish of us to the more wise, and only sorrow, futility, and disappointment will betide both, till both in some approximate degree get to conform to the same. Heaven's laws are not repealable by earth, however earth may try—and it has been trying hard, in some directions, of late! I say, no well being, and in the end no being at all, will be possible for you or us, if the law of Heaven is not complied with. And if 'slave' mean essentially 'servant hired for life,'—for life, or by a contract of long continuance, and not easily dissoluble—I ask, whether in all human things, the 'contract of long continuance' is not precisely the contract to be desired were the right terms once found for it? Servant hired for life, were the right terms once found, which I do not pretend they are, seems to me much preferable to servant hired for the month, or by contract dissoluble in a day. An ill-situated servant that;—that servant grown to be nomadic; between whom and his master a good relation cannot easily spring up!"

* The late King Eyamba made this remark to the late Dr. Lawton in 1850, who told it to Mr. W. H. Ashmall, a Liverpool merchant who has resided for eighteen years on the West Coast of Africa, and to whom I am indebted for his approval of the chief facts contained in this paper.

Would it not be well to allow a regular export of the surplus population, instead of permitting, and indeed encouraging the butcheries of the so called King of Dahomey? The difficulties of humanising, much less of civilising, the Negro in his own country are very great; yet, if such healthy sentiments were generally diffused in this country as have been lately published in an admirable work, entitled *Wanderings in West Africa*, it is impossible to say what great results might in time be attained. This author well says, "Ever remember, that by far the greater number of the liberated were the vilest of criminals in their own lands, and that in their case exportation becomes, in fact, the African form of transportation."*

There is abundant evidence to show that the Negro will not work without a considerable amount of persuasion. Even Dr. R. Clarke† is obliged to admit that the Creoles of Sierra Leone "manifest the utmost contempt for agricultural pursuits, and the same feeling seems to actuate the half educated liberated African lads." Another writer observes‡ that "In Sierra Leone the christian tenderness of the British Government has tended to demoralise them. . . . . The women have become as vicious as those of Egypt, the basest of kingdoms —worse than the men, bad as they are. . . . . Theft is carried to such an extent, that no improvement is possible at Freetown."

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* *Wanderings in West Africa*, vol. i, p. 220.

† *Sierra Leone.* By Robert Clarke, p. 38.

Dr. R. Clarke speaking of the Africans of Sierra Leone, says (*Transactions of the Ethnological Society*, vol. ii, new series, p. 331)—"Servants consider it no crime to rob the white man, and so long as they are undetected they do not lose caste among their equals, although the latter may be aware of their thefts. . . . They appear to hold agricultural pursuits in contempt, preferring to obtain situations in the government offices and merchants' stores; while the young women seek employment as sempstresses, etc., seldom entering service as domestics. . . . Comparatively few of the female creoles are married, and in a colony where the marriage ceremony is held in but little esteem, and generally dispensed with, young girls live as concubines, or "sweethearts," as they phrase it (p. 332). The civilised blacks spare no expense in obtaining the best and newest style of European dress; and this love of finery too often becomes quite a passion amongst the young people, its inordinate indulgence occasionally leading to pilfering and other dishonest acts (p. 326). The Africans are very litigious, and constantly summon each other on the most trivial occasions (p. 330). In one instance (of children born with supernumerary fingers) which came to my knowledge, the infant was on this account, soon after its birth, burnt alive; and, in another case, the child was destroyed by twisting its neck, when it was buried in a dung heap" (p. 333).

‡ *Wanderings in West Africa*, p. 267.

I have stated that one of the results of my inquiry leads me to believe that English institutions are not suited to the Negro race. There seems to be a maximum testimony to show that the liberated and the creoles in our colonies are a perfectly worthless set. They accept all the vices of our civilisation with none of its duties. A recent public writer in behalf of the English colonies on the west coast of Africa well says :—"The African is far more innocent and natural a creature when he has never been brought within the range of civilised life. The liberated Africans are far superior to the rising generation—in energy, in talent, and in honest principles. To handle a hoe has now become a disgrace, and the people have lost their manhood by becoming gentlemen . . . only the ignorant can boast of the extensive freedom we have given the African. Freedom indeed we should have given, but it ought to have been qualified to suit their capacities." *

In now bringing my remarks to a close, I cannot, perhaps, do better than quote the graphic picture of the present state of Africa, which has been only published during the last few weeks. There is much true science and healthy manhood in these sentiments. The work of which I speak is evidently the work of a man who has devoted much attention to the study of the great science of mankind; and I am pleased to find that my own views find ample support in the conclusions of this accomplished and scientific observer. Speaking of the Negroes of Bonny, he says :† "The slaves wore a truly miserable appearance, lean and deformed, with Krakra lepra and fearful ulcerations. It is in these places that one begins to feel a doubt touching the total suppression of slavery. The chiefs openly beg that the rules may be relaxed, in order that they may get rid of their criminals. This is at present impossible, and the effects are a reduplication of misery; we pamper our convicts, Africans torture them to death. Cheapness of the human article is another cause of immense misery to it. In some rivers a canoe crew never lasts three years. Pilfering—

* The editor of the Sierra Leone *Weekly Times*, July 30, 1862, quoted in *Wanderings in West Africa*, vol. i, p. 221.

† *Wanderings in West Africa*, vol. ii, p. 280.

'Show me a black man and I will show you a thief,' say the traders—and debauchery are natural to the slave, and they must be repressed by abominable cruelties. The master thinks nothing of nailing their hands to a water-cask, of mutilating them in various ways; many lose their eyes by being peppered, after the East Indian fashion, with coarsely-powdered cayenne, their ears are cut off, or they are flogged. The whip is composed of a twisted bullock's or hippopotamus's hide, sun dried, with a sharp edge at the turns, and often wrapped with copper wire; it is less merciful even than the knout, now historical. The operation may be prolonged for hours, or for a whole day, the culprit's arms being tied to a rafter, which keeps them at full stretch, and every fifteen minutes or so, a whack that cuts away the flesh like a knife, is administered. This is a favourite treatment for guilty wives, who are also ripped up, cut to pieces, or thrown to the sharks. If a woman has twins, or becomes mother of more than four, the parent is banished, and the children are destroyed. The greatest insult is to point at a man with arm and two fingers extended, saying at the same, Nama shubra, *i.e.*, one of twins, or a son of some lower animal. When a great man dies, all kinds of barbarities are committed; slaves are buried, or floated down the river bound to bamboo sticks and mats, till eaten piecemeal by sharks. The slave, as might be expected, is not less brutal than his lord. It amazes me to hear Englishmen plead that there is moral degradation to a Negro bought by a white man, and none when serving under a black man. The philanthropists, doubtless, think how our poorer classes at home, in the nineteenth century, would feel if hurried from liberty to eternal servitude by some nefarious African. But can any civilised sentiments belong to the miserable half-starved being, whose one scanty meal of vegetable per day is eked out with monkey and snake, cat and dog, maggot and grub; whose life is ceaseless toil, varied only by torture, and who may be destroyed at any moment by a nod from his owner? When the slave once surmounted his dread of being shipped by the white man, nothing under the sun would, I believe, induce him willingly to return to what he should call his home. And, as they were, our West

Indian colonies were lands of happiness compared with Oil Rivers; as for the 'Southern States,' the slave's lot is paradise when succeeding what he endures on the West Coast of Africa. I believe these to be facts, but *tant pis pour les faits.* Presently, however, the philanthropic theory shall fall, and shall be replaced by a new fabric built upon a more solid foundation."

Finally let me observe, that it is not alone the man of science who has discerned the Negro's unfitness for civilisation as we understand it. Here is the opinion of Mr. Anthony Trollope,* who is certainly quite guiltless of ever having examined the evidence on the distinction of the Negro and European, and yet truly says of the Negroes:—"Give them their liberty, starting them well in the world at what expense you please, and at the end of six months they will come back upon your hands for the means of support. Everything must be done for them; they expect food, clothes, and instruction as to every simple act of life, as do children."

We must for the present leave alone all questions as to the origin of the Negro, and simply take him as he exists, and not as poets or fanatics paint him. We shall then learn, that it is only by observation and experiment that we can determine the exact place in nature which the Negro race should hold, and that it is both absurd and chimerical to attempt to put him in any other.†

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* *North America*, vol. ii, p. 85. 3rd Edition. 1862.

† We believe the following opinion of Mr. George M'Henry can be confirmed by all who have narrowly watched the position of "Free" Negroes in the Federal States. He says that "he has resided nearly all his life in Pennsylvania, where exists the largest community of free Negroes in the world, and he can testify to the gradual decay in their health and morals as slavery disappeared from the neighbourhood. Neither the laws of the land, nor public societies for his benefit, prevent the African from degenerating; nothing but the controlling influence of a master will keep him from sinking to that barbarous condition which is his natural state,"—*The Cotton Trade Considered in Connection with Negro Slavery in the Confederate States*, 1863, p. 259. Many other interesting and important facts, showing the superiority of the "Slave" over the "Free" Negro, will be found in this valuable work.

Another public writer, Mr. George Augustus Sala, gives the following picture (not derived from the study of Anthropology) of the Free Negroes of New York, vide *Daily Telegraph*, Jan. 2, 1864.—"Hundreds of witnesses could, if needful, be put into the box to prove how utterly puerile and irresponsible the vast majority of these poor people are. From the old slaves who crawl about the houses of their owners, fed for nothing and not worked, saying

APPENDIX.

After reading the foregoing paper, I was favoured with an account of Dr. Pruner-Bey's further researches since he published his first "Memoir," and as he has kindly placed them at my entire disposal, I have thought it advisable to annex a translation of M. Pruner-Bey's obliging communication.

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and doing what they please, and sleeping with their feet so thrust into the embers on the hearth that they scorch their toe-nails off, to the little black brats snuggling like so many guinea-pigs about the floors of southern houses; from these to the women who buy silk umbrellas instead of childbed linen, and who come roaring to their mistress for remedies if they have a sore finger or a soft corn—who will only take medicine when they are sick from her hand—and who, *as mothers, are so shamefully neglectful of, and wantonly cruel to, their children, that the white ladies are often compelled to take the little ones away from their unnatural parents to preserve their lives*—it is the same lamentable case of an inferior and impracticable race. And in the North—the free North—the land of liberty, of intelligence, of newspapers, and Methodist chapels, and common schools; do they fare better there? I declare that, of all the miserable and woe-begone objects I have ever beheld out of a Russian goal or an Italian lazar-house, the free Negroes I have seen in New York are the wretchedest and most forlorn. Take away those who are coachmen or body-servants in private families, and who are clad in some kind of decent livery by the employers; take away a proportion of mulattoes and 'bright' coloured people, among which class the women are often given to tawdry finery in apparel, but seldom to personal cleanliness; take away a few, a very few old Negroes, who have made money by storekeeping, and wear broadcloth and tall hats; and the residue is a listless, decrepit, drowsy, cowering race, always going to the wall, always sliding and slinking away, always ragged, always dirty—lying and pilfering and tipsifying themselves in a feckless, shambling kind of way—horribly overgrown children—*cretins* whose *goîtres* are on their brains instead of in their throats. In the back slums of New York you meet them prowling about with baskets full of scraps and offal. When the police rout out some dilapidated tenement at the Five Points, they are sure to find Negroes lurking and snoozling among the rubbish. Let a streak of sunshine be cast across the pavement, and you are sure to find a Negro sitting on a doorstep, basking in the radiant warmth."

"The gallery of the *Jardin des Plantes* has, since the publication of my *Memoir on Negroes*, received eleven more crania belonging to the same family, nine of which are those of males, and two of females. Three of the former belong to the tribe of Shir, inhabiting the banks of the White Nile; the other six are those of a Wolof, of a Thiong of Low Casamance, two of Krumans, and two of Griots. Of the two female crania, one belonged to a Negress of Saloum, and the other to a Griot.

"On comparing the subjoined table of measurements with that of the Memoir, it will be observed, that as regards the circumference, the crania of the new series are more voluminous than those of the first series. Moreover, the mean vertical diameter is here sensibly larger, whilst that of the width differs but little from that in the first series. All these new crania present the ellipsoid form; they are dolichocephalous, and more or less prognathous.

"As regards the circumference, it attains in the Shir only 490, 520, and 530 millimeters; whilst in the rest it oscillates between 530 and 75 mm. The last figure refers to the Wolof cranium, a very vigorous Negro tribe, often praised for their beauty. This cranium is very massive and coarse. The following are its chief features:—forehead low, narrow, and receding; a protuberance formed by the confluence of the superciliary arches with the glabella. Expansion of the face enormous compared with that of the forehead. Viewed in front the cranium presents the contours of a narrow lozenge. The nasal aperture corresponds, by its elliptic form, with that of the cranium. The nasal bones are short and narrow; the orbits very spacious, inclined downwards and outwards; their inferior margins, of considerable thickness, advance much beyond the superior. The malar bones are very high, thick, and form a rounded prominence in front; the jaws, as well as the teeth, are very strong; the latter are, in this individual, much used up and partly carious. Chin—square, high, and wide—projects but little. Prognathism apparently inconsiderable. This Negro has, what is called, an open physiognomy. I have dwelt upon the preceding details, in order to show by an example to what extent tribes and individuals, reputed hand-

some, may deviate from the gross type of the great Nigritian stock, without, however, transgressing the limits which separate the African Negro from the other human races.

"Apart from the nose, which is flatter than that of the Wolof, the cranium of the Thiong, with a circumference of 550 millimeters, approaches the latter by the elongated contours of the face. The Krumans, on the contrary, present a type differing from the preceding; for their face is comparatively short, compact, and wide. Their cerebral cranium is also distinguished by the great development of the vertical diameter. It is, consequently, by these two crania that the mean of this diameter has reached the point indicated in the table.

"The three crania of the Shir Negroes, one of which is that of a young subject, demonstrate what had already been observed upon the living natives of the Nilotic region, that it is wrong to consider them more favourably organised than the western tribes. One of these crania (No. 2,919) abounds in the animal character of the face. Fortunately, its prognathism is moderate, whilst in No. 2,920 prognathism is excessive by the side of less coarse features.*

"The crania of the two Negresses did not present anything deserving particular notice."

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* "Nature thus applies its means of compensation, even upon individuals belonging to more or less savage races, in order not to leave us in any doubt as regards the limits which physically separate man from the brute, at least as regards the form and the disposition of parts."

CEREBRAL CRANIUM.	Mean Measures in Millimeters. Mean of 9 Negroes.	Mean of 2 Negresses.
1. DIAMETERS (WITH THE CALLIPERS).		
Antero-posterior	187	178
Vertical	133	127
Transverse Diameters: Inferior frontal	99	93
Transverse Diameters: Superior frontal	115	109
Transverse Diameters: Bi-temporal	117	115
Transverse Diameters: Bi-auricular	115	108
Transverse Diameters: Bi-parietal	137	130·5
Transverse Diameters: Bi-mastoidian	121	110
2. CURVES (WITH THE METRICAL TAPE).		
Horizontal circumference	535	517
Transverse bi-auricular curve	321	310
Vertical antero-posterior circumference	522	489·5
Decomposed in: 1. Middle part: Frontal part	117	111·5
Decomposed in: 1. Middle part: Parietal part	137	125
Decomposed in: 1. Middle part: Occipital part	118	111
2. Inferior part: Length of the occipital hole	36	32
2. Inferior part: Distance from the anterior border of the foramen and the frontal eminence (approximative)	114	110
3. OTHER MEASURES.		
Distance in a straight line from the auditory canal to the nasal eminence	114	110
Distance in a straight line from the auditory canal to the occipital protuberance	113	107
Dimensions of the occipital foramen: length	36	32
Dimensions of the occipital foramen: width	30.7	28
4. MILLESIMAL PROPORTIONS.		
Circumferences: horizontal circumference	1000	1000
Circumferences: vertical circumference	975	946
Diameters: length (antero-posterior diameter)	1000	1000
Diameters: Width (bi-parietal diameter)	732	733
Diameters: Height (vertical diameter)	711	713
DESIGNATION OF MEASURES.		
Total length of the face, from the superciliary line to the inferior margin of the chin	135	113
Partial length of the face from the inferior nasal spine: to the superciliary line (major length of nose)	56	54
Partial length of the face from the inferior nasal spine: to fronto-nasal suture (minor length of nose)	47	44
Partial length of the face from the inferior nasal spine: to inferior border of chin	74	59
Maximum length of the superior jaw from the fronto-maxillary suture to the superior alveolar arch	64	59·5
Maximum distance of the two zygomatic arches	130	124
Inferior jaw: Distance of the two angles	100	88
Inferior jaw: From the symphysis to the angle in a straight line	99	92
Inferior jaw: Length of the vertical branch	66	58
Orbital aperture: height	32·4	33
Orbital aperture: width	35	35·5

On the Weight of the Brain in the Negro. By Thomas B. Peacock, M.D., F.R.C.P., Physician to St. Thomas's Hospital and to the Hospital for Diseases of the Chest, Victoria Park.*

Professor Tiedemann, in the paper on "The Weight of the Brain in the Negro," published in the *Philosophical Transactions* for 1836, reports only one original observation of the weight of a recent brain, and quotes two others from Sömmering and one from Sir Astley Cooper. His conclusions are, indeed, mainly drawn from measurements of the contents of the cranial cavity of dry skulls, a method of estimating the capacity of the brain obviously very imperfect.

During the last few years I have had the opportunity of weighing the recent brain of Negroes in four instances, and two other observations were published by the late Professor John Reid in his tables of the weights of the different organs of the human body.† I propose in this paper to bring together these observations, and to deduce from them such inferences as they warrant, as a contribution to a more accurate knowledge of the weight of the brain in the Negro.

The observations are as follows:—(*See Table overleaf.*)

From these observations it will be seen that the mean weight of the Encephalon in 4 males, is 44 oz. 12·6 drchms. Extremes, 46 oz. 2½ drchms., and 43 oz. 8 drchms.

Mean weight of the cerebrum in 3 males, 38 oz. 14·08 drchms. Extremes, 38 oz. and 40 oz. 2½ drchms.

Mean weight of the Cerebellum with pons Varolii and medulla oblongata in 3 males, 6 oz. 5·7 drchms. Extremes, 7 oz. and 6 oz. 0¼ drchms.

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* Read February 16, 1864.

† *London and Edinburgh Monthly Journal of Medical Science*, 1843 and 1847, and *Pathological Transactions*, 1860-61, vol. xii.

WEIGHT OF THE BRAIN.

	No.	RACE and CAUSE OF DEATH.	Age.	WEIGHT OF Whole Body.	Encephalon.	Cerebrum.	Cerebellum.	Cerebellum, with Pons Var. and Med. Obl.	Ratio of Encephalon to Body.	Ratio of Cerebellum to Body.	Ratio of Cerebellum with Pons Var. and Med. Obl. to Encephalon.
				lbs.	oz. drms.	oz. drms.	oz. drms.	oz. drms.			
MALES.	1	African; from Mozambique. Phthisis	21	84	43 8	...	...	...	1 to 30·87	...	...
	2	African. Fever	23	126	45 8	38 8	...	7 0	1 to 44·3	...	1 to 6·7
	3	Born of African parents at Buenos Ayres. Phthisis. (Height, 4 ft. 10½ in.)	24	67	44 0	38 0	4 7½	6 1	1 to 24·3	1 to 239·8	1 to 7·25
	4	Native of Congo. Fever and Bronchitis. (Estimated height, about 6 ft.)	40	168	46 2½	40 2¼	5 3	6 0¼	...	...	1 to 7·6
FEMALES.	5	African. Pneumonia, six after weeks childbirth ...	25 to 30	93	41 0	35 8	4 13	5 8	1 to 36·29	1 to 309·2	1 to 8·5
	6	African Granular disease of kidneys; slight effusion of blood in membranes of brain	28	...	46 0	...	...	...	...	...	...

All the weights are Avoirdupois or Imperial.

Mean weight of the Encephalon in 2 females, 43 oz. 8 drchms. Extremes, 46 oz. and 41 oz.

The foregoing observations are so limited in number that it is impossible to decide how far they represent the average weight of the encephalon and its several parts in Negroes. The observations previously published are also too few to supply the deficiency; but, so far as they go, they do not differ very materially, when the weights employed are capable of being ascertained.

In the cases given by Sömmering the weight used was avoirdupois, and they are 42 oz. 3 drchms. in a boy of fourteen, and 45 oz. 4 drchms. in a tall handsome man of twenty. Sir Astley Cooper does not mention the weight employed, but says that the brain of a large Negro weighed 49 oz. Tiedemann's case was a man of twenty-five years of age, thin, and hardly five feet high, and the brain is stated to have weighed 2 lbs. 3 oz. and 2 drchms., but the weight is not named, though it is elsewhere stated that the other observations were in troy or apothecaries' weight. If so, the organ was extremely light. Indeed, it appears probable, that it was not weighed till after it had been immersed in spirit and had lost considerably in weight.

2. It is well known that the brain varies in size in the two sexes, at different periods of life, increasing up to about twenty-five years of age and again declining in after life. It becomes, therefore, necessary, in forming any estimate of the relative weight of the brain in the Negro and in the European, to compare the organs in persons of the same age. I have, therefore, taken from the tables of the weight of the brain published by Dr. Reid and myself, all the weights in men between twenty-one and forty years of age, inclusive; and in females between twenty-one and thirty (these periods embracing the ages of the Negroes whose brains were weighed), and calculated the average weights. The results are as follows :—

Of 105 males between twenty-one and forty years inclusive, the mean weight of the brain was 50 oz. 5·56 drchms.; and the three heaviest weighed 62 oz. 8 drchms., 62 oz., and 61 oz. 2 drchms. The three lightest weighed 38 oz., 40 oz. 8 drchms., and 40 oz. 10 drchms.

Of thirty-four females between twenty-one and thirty years inclusive, the mean weight of the brain was 44 oz. 7·47 drchms. The three heaviest weighed 50 oz., 50 oz., and 49 oz. The three lightest weighed 39 oz., 39 oz. 2 drchms., and 39 oz. 14 drchms.

It will thus be seen that the brain did not attain in any of the four Negroes the average of the European brain by several ounces; while of the two brains of Negresses, one somewhat exceeded the European average. On the other hand, in none of the Negro brains in either sex was the weight so low as in some of the brains of Europeans.

The relations which the Negro brains bear to the whole of those weighed, are shown in the following tables :—

Of the 105 brains of European males there weighed from

38 oz.	to	41 oz.	inclusive	3	ratio p. c.	2·85				
41 ,,	and under	46 ,,	,,	11	,,	10·47	Negroes	3		
46 ,,	,,	51 ,,	,,	51	,,	48·56	,,	1		
51 ,,	,,	56 ,,	,,	25	,,	23·80				
56 ,,	,,	61 ,,	,,	11	,,	10·47				
61 ,,	to	62 8 ,,	,,	4	,,	3·80				

Of thirty four brains of European females there weighed from

39 oz.	to	41 oz.	inclusive	6	ratio p. c.	17·64				
41 ,,	and under	46 ,,	,,	14	,,	41·17	Negresses	1		
46 ,,	,,	51 ,,	,,	14	,,	41·17	,,	1		

3. The ratio of the encephalon to the weight of the whole body is liable to great variations from the state of stoutness or emaciation of the bodies. Thus, I find from a considerable number of observations, calculated in the papers before referred to, that the proportions varied in persons of the male sex residing in England and Scotland, from twenty-one to forty years of age inclusive, from 1 to 25·2 to 1 to 52·3, and the mean of twelve observations in persons between twenty-one and forty-four was 1 to 32·73. The calculations based on the observations in this communication show a range in the Negro from 1 to 24·3 to 1 to 44·3. There is only one observation in a Negress, but in this the proportion is 1. to 36.9. The range in European females between twenty-one and thirty years of age, inclusive, being 1 to 27 and 1 to 38.9, and the mean of

five observations in persons from twenty-four to forty-two years of age 1 to 39·2.

4. The weight of the cerebellum alone is given in only three cases in Negroes (two males and one female); from these it appears that in males the weights were 4 oz. 7½ drchms., and 5 oz. 3 drchms.; in the Negress the weight was 4 oz. 13 drchms. In thirty-two European males, the mean weight of the cerebellum was 5 oz. 3 drchm., and the range from 4 oz. 6 drchm. to 6 oz. In nineteen European females, the mean weight was 4 oz. 13·4 drchms., and the range from 4 oz. to 5 oz. 8 drchms.

5. The relation of the cerebellum, with the pons Varolii and medulla oblongata, to the whole encephalon, ranged in the Negro from 1 to 6·7 to 1 to 7·6. In European males, from 21 to 40 years of age inclusive, the range was from 1 to 6 to 1 to 8·7. There is only one observation in a Negress: in this, the proportion is 1 to 8·5. In European females, between twenty-one and thirty-years of age inclusive, the range was from 1 to 7·2 to 1 8·9.

It would thus appear that the average weight of the cerebellum, and the proportions which the weight of the cerebellum with the pons Varolii and medulla oblongata bear to the whole encephalon, do not very materially differ in the Negro and in the European.

Sir Wm. Hamilton* estimated the weight of the brain by measuring with sand the capacity of the cranial cavity in fully three hundred human skulls; and Professor Tiedemann adopted a similar method with reference to two hundred and forty-eight skulls of different races, except that he employed dry millet-seed in place of sand. The former gentleman concluded "that the common doctrine that the African brain, and particularly that of the Negro, is greatly smaller than that of the European, is false. By comparison of two Caffre skulls, male and female, and thirteen Negro crania (six male, five female, and two of doubtful sex), the encephalon of the African was found not inferior to the average size of the European." Professor Tiedemann inferred from forty-one observations of the capacity of

* Monro's *Anatomy of the Brain*, p. 5, Edinburgh, 1831.

the skulls of Africans (thirty-eight males and three females), "that the brain of the Negro is, upon the whole, quite as large as that of the European and other human races."

The few observations here given of the weight of the recent brain in Negroes, tend generally to support the conclusions of Sir William Hamilton and Professor Tiedemann, that there is no very marked difference between the ordinary size of the brain in the African and the European; but they certainly indicate that the brain is usually somewhat smaller in the former race than in the latter. These observations must, however, as before stated, be regarded only as a contribution towards a more accurate knowledge of the weight of the brain in the Negro. To ascertain the general average, and the range of weight in different races of Africans, and in different individuals of the same race, a very much more extended series of observations is necessary; for it is fair to suppose that there is great variety in these respects.

The weight of the brain is also influenced by the nature of the diseases producing death. In cases where the patient has been killed when in full vigour, or where death has rapidly resulted from disease, the brain is generally found to weigh more than when death has followed prolonged illnesses of an exhausting character. It would, therefore, be necessary to institute a thoroughly satisfactory comparison, that the weights compared should be those of persons dying under similar circumstances. The observations here published are much too few to admit of any such analysis.

P.S.—My attention has recently been drawn to a statement by Dr. Hunt, that M. Broca has found the weight of the brain in an European to be 1,003 grammes, and in a Negro, 925·5 grammes, or 35·5 ounces and 32·5 ounces avoirdupois or Imperial, respectively. The weight of the European brain as given by M. Broca, is, however, much below the average. My own observations, deduced from one hundred and thirty-one observations, give the average weight of the male European as 50 oz. 3·25 drachms, and of the female, from seventy-four observations, as 44 oz. 14·3 drachms. M. Parchappe estimated the weight of the brain of the adult European male at 1,352

grammes, and of the female at 1,229 grammes, or 47·5 oz. and 43·2 oz. avoirdupois, respectively.

It is probable, also, that the Negro brain weighed by M. Broca, was below the usual weight; indeed, I am inclined to believe either that the brain was not that of an adult, or that it had lost considerably in weight from having been immersed in spirits before being weighed. The great diminution in weight which results from maceration of the brain in rectified spirits is shown by the first of the following observations, and the rapidity with which such diminution takes place by the second :—

Weight of brain of an idiot child, weighed January 1859, 23 oz. 3½ drachms. Weight in December 1863, 14 oz. 8 drachms: loss, 8 oz. 11½ drachms.

Weight of the brain of a female, aged thirty-two, who had died of phthisis, weighed in December 23rd, 1863, 47½ oz. Weight on December the 29th, 39¼ oz. : loss 8¼ oz.

Observations on the Past and Present Populations of the New World. By William Bollaert, F.R.G.S., F.A.S.L., Corresponding Member of the University of Chile, Ethnological Society of London, of New York, etc.*

I premise these remarks by stating that I lean rather to the polygenistic than to the monogenistic view of human creation; and to simplify the matter of my subject, I will consider for the present the red or copper-coloured men of the New World to be of one species of the genus *Homo*, a species in the scale of intelligence, peculiar to itself. I have come to this conclusion by a study of their various personal characteristics, their languages—without alphabets—forms of government, works of art of more than one period; but more particularly, as it would seem, of a different physiological condition when compared with other species of mankind.

The monogenists believe in one creation only, viz., that of the white man, from which has resulted their yellow, brown, red, and black races. Other monogenists tell us there are superior and inferior breeds, and that the inferior at times die out, as weaker weeds disappear among the strong growing grasses. If we lean to the polygenistic view, or that of separate creations, it will, I think, render our study of Anthropology and Ethnology less complex, and when we have learnt our lesson, we shall then see which of the two arrangements is the more logical. We are told by some writers that the investigations of Darwin on the variations of species, set aside objections to an origin from one stock. But it is not for me to treat here upon the theories of Progression or Transmutation; or of Darwin's views "*On the Origin of Species by Variation and Natural Selection;*" or on Huxley's "*Evidence as to Man's Place in Nature;*" or the action of unlimited time according to Lyell, for the slow and gradual formation of what are denominated Caucasian, Mongolian, Negro, and other races, seeing that I have adopted the polygenistic arrangement of

* Read May 12, 1863.

human creation. As for the primeval species of men, they may have existed in the pliocene, miocene, or even an older period.

With the polygenistic idea, the principal species, or as called sometimes, races, realms, or types of man, as regards colour, may be placed as follows,—1. White; 2. Brown; 3. Yellow; 4. Red; 5. Black; from which proceed varieties by endless mixtures. As a general description, the red man has long lank black hair, a heavy brow, a dull eye, a full compressed lip, and a salient and dilated nostril.

Before the discovery of the New World by Columbus in 1492, its population was really divided into Ethnic groups; many had gone through various phases of their own peculiar domestic and political existence, some being more advanced in government than others, and at the period of the Spanish conquest, or even before, many appear to have arrived at the apex of a civilisation at which their own organisation and intelligence permitted them to arrive,—not a high standard, if compared with the powers of mind and body of the white man. It is very difficult to say what was the amount of population in America before its discovery by Europeans; but we do know for certain that it has very much diminished; in the first instance through the cruelties of the Spaniards, the introduction of European diseases and enslavement, causing the entire disorganisation of the aboriginal nationalities. It has been estimated that before the discovery of America the population amounted to over 100,000,000. Mexico alone had 20 millions; New Granada, 8 millions; the United States, two hundred years since, had 17 millions; at present there may be about 10 to 11 millions in all, by my calculation. Las Casas maintained that within the first forty years of the discovery of America, twelve to fifteen millions of the natives had been destroyed by the Spaniards. Let us bear in mind, also, that millions of Negro slaves have been imported from Africa as a mere working population for the European, to fill up the void caused by their extermination of a people who were not found to have generally great industrial propensities. According to the best statistics I have been able to examine, the present population

of the New World is over 73¾ millions* (73,842,833), including nearly 26 millions for the Spanish American Republics, and say 32 millions for the United States of America.

Commencing with North America, and coming down to the north frontier of Mexico, the country was occupied by various nations and innumerable tribes; these had been builders of earthworks "of the primæval and pre-architectural periods," hunters, and warriors. It is not easy to give them ethnic or political positions, but for want of a better we may call them the nations and tribes of red men of the north, having much in common as to the state of society they had attained. They had languages, dialects, and numbers, but they had not arrived —and in this there is a common agreement throughout the New World—at the discovery of an alphabet, at least no alphabetic form has as yet been discovered. The next assemblage of nations—and they were great builders in stone at an early date—we will call the Mexican, including those interesting groups of men of Central America down to the Isthmus of Darien; this was truly a great ethnic realm, containing a people having powers of no ordinary character when compared with others to the north and south of them. Two great streams of emigration seem to have gone from the Mexican region in very early times, peopling the West India islands; one was found to be of a pacific character, these we will call Lucayans, when they had taken up their abode there; the other had warrior propensities, and were styled Caribs† by the Spaniards, this word meaning brave in the Carib or Galibi language.

We now come to the great nations of South America; first, principally, the Chibcha or Muysca, occupying at the time of the Spanish conquest the table-lands of Bogotá; but these nations, like the Mexican and Peruvian, were seated on the ruins of others, and which also had worked in stone. Continuing south we arrive at another collection of table-lands. The first nation we hear of were the Quitús; these were con-

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* The *Abeille Médicale*, Paris, gives, in 1863, for the whole population of the globe, 1,321,000,000.

† The Caribs have been sometimes, but erroneously, called "Indios Negros," or black Indians. There are no Negro-coloured Indians.

quered by the Caras or Caranes, who went to Quito from the coast of the Pacific, but these were conquered in turn by the later Incas of Peru. The next assemblage of people occupied the extensive countries now known as Peru and Bolivia. This land had been very early selected by nations, some of which have left remarkable sculptured stone monuments, particularly at Tia-Huanacu, nearly 13,000 feet above the level of the sea, on the south shore of Lake Titicaca;* but when the Spaniard ravaged the country, it had been possessed, through long years of conquest, by the Inca dynasty, whose seat of government was at Cuzco, to the north of Lake Titicaca, and far from the coast. To the south, in Chile, roamed amongst others, the still unconquered Araucaño tribes; and in this same category may be placed those now known as Patagonians, Guaranis, tribes of Brazil, of the Amazon, and those of the shores washed by the West Indian Sea, these last of Carib character.

The following may have been about the ethnographic position as regarded the nationalities in the New World before its discovery by Columbus:—Red nations of the north; Mexican and Central American nations, to the Lucayans and Caribs of the West Indies; Chibcha nations of New Granada; Quitu-Cara nations of Quito; Peruvian nations of Peru and Bolivia; Araucaños, and other tribes of Chile; tribes of Patagonia and Tierra del Fuego; tribes of the Pampas and Guarani; tribes of Brazil; tribes of the Amazon; tribes, some of Carib race, between the Amazons and north shores of South America, then comprising a population of probably more than 100 millions of Indians: early writers say "countless aborigines."

FORMER POPULATION OF THE NEW WORLD.

Red nations of the north	20,000,000	Chile	4,000,000
Mexican	20,000,000	Patagonia	2,000,000
Central America	10,000,000	Guarani	4,000,000
Lucayans, principally	6,000,000	Brazil	4,000,000
Chibcha	8,000,000	Amazons	5,000,000
Quitu-Cara	4,000,000	Caribs	5,000,000
Peru	8,000,000		100,000,000

* See my paper in *Intellectual Observer*, May 1863, "On the Ruins of Tia-Huanacu," with drawing, from a photograph of the sculptured monolithic portal.

I now come to that portion of my subject as regards the present population of America, reserving for the conclusion of these observations the consideration of the people at present inhabiting the United States. It is very difficult indeed to ascertain the amount of population in Spanish America, for periods since the conquest, as the Spanish government studiously avoided making any statistics of their colonies known to the world. I may also state that under Spanish rule, when tribute or poll-tax was exacted from the Indian, when the census was being taken, many would absent themselves. Here is the form of a receipt given to the Mexican tributary:—"Jurisdiction of Tetepango. Fabian Sanchez, the tributary of this village of Santiaguito, has paid the royal tribute-tax, which he does as being a 'Pardo' (Indian), for the period that belongs to the end of this year of 1792.

"Signed, "George Acebedo.
"Signed, "Torre."

At present, throughout Spanish America, to avoid being recruited for the army, as also on the score of taxation, not a few young men often absent themselves when the census is being taken, so that ten, and even twenty, per cent. is added to the lists sent in to the government. Perhaps Humboldt was one of the first to give us information on this matter, which he would procure rather as a favour from the colonial authorities. In his time the population would be classed as follows:—

Whites, as old Spaniards.
Whites, as Criollos,* descendants of Spanish parents.
Mestizoes,† descendants of male Spaniard generally and Indian female.
Indians, reduced and romanised, also the wild.
Negroes, as slaves.
Mulattoes, from the white male and negress slave.

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* *Criollo* must not be confounded with *Creole;* the first is the offspring of Spanish parents born in the colonies; the second applies to mixtures of White and Negro, when the white predominates; but they are Mulattoes. Does the term Mulatto come from the Spanish word *mula,* or mule?

† Herrera says that the Mestizo is of good stature, but differs somewhat from the Spaniard, and that they are generally inconstant, tattlers, and gluttons, although there are many good ones.

*Zamboes,** from black male and Indian female slave.
Whites, Spaniards and Criollos.
People of Colour: Mestizoes, Mulattoes, Zamboes.
Negroes.
Indians.

Now, as the Indians and other coloured people were and are still in large numbers, the omission of these, or portions under Spanish rule, would keep the amount of population on paper down; but their addition, under the present republican form of governments, would swell the amount almost *ad libitum* in some of the countries. I do not mean to say that the white and mixed population has not increased in South America since its separation from Spain, but it has not increased anything like that in the United States: climate, in the first place, has been against it; and secondly, I conceive that the mixture of the three species of White, Indian, and Negro has been unsatisfactory to a healthy strong population, or even of a prolific character; some details on these points I shall advert to as the various countries and their people are examined in relation to this question.†

Mexico. Its present inhabitants are Criollos, or white descendants of Spanish parents; these call themselves Mexicans; however, the remnant of the Indian nations is the true ethnic Mexican, and is a pure species, which will be found as persistent as ever in its physiological character, but possibly to be destroyed at no late date by connexion with the white and black, as being of a different species, their diseases, customs, and vices. The Indian predominates in Mexico; they are the tillers of the soil and workers of mines for the Criollos and some Mestizoes, who have power in the country. The Métis, or

* Modern writers call Zamboes, Mestizoes, and Mulattoes, hybrids. Pigeon-footed people are called in Spain Zamboes.

† Gliddon (p. 615), *Indigenous Races,* says, that out of the whole population of the world (about 1,321,000,000), some 600, more or less, available ethnological portraits are the limit of his estimate of public iconographical property bearing on the types of mankind—Europeans hardly included—now in existence. This enables ethnography at the present day to boast that it possesses about *half an individual* per million to represent all mankind! whereas, out of 216 known species of *monkeys,* there are not a dozen of which naturalists do not possess exact and elegant delineations; and yet, it is pretended to give us *systems* vindicating the "unity of the human species."

Mestizo, is a very mixed class of the community, composed of varieties in every proportion of commixture of the white male and Indian female. The better sort is known as the *Ranchero*, a farmer and herdsman, mixed up in all revolutions. The inferior variety is the *Lepero*, the lazzaroni of Mexico. Some Negroes there are, these with the Indian female and *vice versâ*, produce the Zambo and its mixtures. Further on, I shall refer to the question of apparently arrested prolificness, when these varieties breed *in and in;* and to the peculiarities connected with the extent of prolificness in the mixture of the White, Indian, and Negro species, where they do not exactly breed in and in. If we make out a good case as to arrested prolificness, as regards the progeny of the mixture of the White and Black, White and Red, and White and East Indian peoples, and that such progeny are not so satisfactory as specimens of humanity as the progeny of white male and female, black, red, and brown, then I think there will be some ground to go upon, and entertain on physiological principles the idea of separate creations.* Taking this view in connexion with the New World, and considering the whole of the red people there as one *species*, we may perhaps call the Red man of the north the Mexican, the Peruvian, etc., *races*, these again to be subdivided into great families, nations, and tribes.

Garcia Palaez states that about the middle of the eighteenth century, 4,500,000 was given for the population of Mexico, composed of Spaniards† one-tenth, Indians and castes nine-tenths; one-third of the latter being Indians, two-thirds Mestizoes and Mulattoes (there must have been Negroes and Zamboes. The following will give some idea of the division then of species and varieties :—

Species.	Spaniards and Criollos	450,000
	Indians	1,350,000
	Negroes	500,000
Varieties.	Mestizoes	1,500,000
	Zamboes	300,000
	Mulattoes	600,000
		4,500,000

* See a paper of mine in the *Sporting Review* for February 1863, on "The Llama, Alpaca, Huanacu, and Vicuña Species, and their Varieties."

† Called sometimes in South America Gachupines, Chapetones, and Godos.

I suppose, however, that the 1,350,000 Indians were those only who paid tribute, the wild and "unreduced" were not taken into the account.

In 1803, 5,764,731 is given for the entire population of Mexico; in 1820, 6,209,000; in 1825, Humboldt stated it at 7,000,000; in 1842, 7,015,509; and in 1850, 7,626,813, divided as follows:—

Indians	4,354,886
Whites	1,100,100
Mestizoes, Zamboes, and Mulattoes	2,165,345
Negroes	6,600
	7,626,831

Here the "whites" must include Spaniards, Criollos, and the lighter varieties of Mestizoes and Mulattoes.

In 1861, Mr. Lempriere stated the population as under:—

Aboriginal Indians (true Mexicans)	3,500,000
Criollos (calling themselves Mexicans)	1,200,000
Métis or Mestizoes	2,000,000
Mulattoes and Zamboes	600,000
Europeans, as Spaniards,* French, Germans, English, Italians, Yankees, etc., etc. (some of these marry Criolla females)	25,000
	7,325,000

But a government report for 1861 gives 8,283,088; of these, over four millions were Indians; the remainder, some Criollos, and many Mestizoes, call themselves "*gente de razon*," reasoning people, but the Indians are denominated "*gente sin razon*," or unreasoning people.

The following is from M. de Larenandière's *History of Mexico*, indicating the different degrees of the mixture effected between the three species of White, Indian, and the Negro:—

Mestizo,[1] product of Spaniard and Indian woman.
Castizo,[2] of a Mongrel[3] woman and a Spaniard.
Spanish (!) of a Castizo and a Spanish woman.

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* When the South American colonies separated from Spain, the patriots banished the greater portion of the old Spaniards from their countries, thus losing a pure race.

[1] Pure mixture. [2] Offspring of Mestizoes. [3] Difficult to classify.

Mulatto, of a Spaniard and a Negress.
Morisco,[1] of a Mulatta woman and a Spaniard.
Albino,[2] of a Morisco and a Spanish woman.
Tornatras[3] of an Albino and a Spanish woman.
Tentinelaire,[4] of a Tornatras and a Spanish woman.
Lobo,[5] of an Indian woman and a Negro.
Caribujo,[6] of an Indian woman and a Lobo.
Barsino, of a Coyote[7] and an Indian woman.
Grifo,[8] of a Negress and a Lobo.
Canisa, of a Mongrel woman and an Indian.
Albarazado, of a Coyote and an Indian woman.
Mechino, of a Lobo and a Coyote.

It was stated lately in the Spanish Cortes by Señor Pacheco, that there were only 8,000 of the Spanish race (Criollos) in Mexico, the rest of the people were mixed breeds, or *hybrids,* there were, however, many Indians of pure American blood; still, he looked upon the present Mexican population as doomed to destruction. Don Lucas Alaman, a Mexican Criollo, and a Minister of State, long since said that the mixed breeds in Mexico would soon die out. Upon this sort of showing, should the different *species* be mixed, in the end, humanity would be destroyed. The present military promenade and occupation of Mexico by the French, and the probable advent of large numbers of Germans, with an Austrian Prince as Emperor, will do much good to Mexico in every way, for such will lead to some really settled and strong government. The yellow fever, and the worst form of it—the *vomito prieto,* black vomit—is a scourge confined to the coasts of this country, carrying off, under ordinary circumstances, about 3,000 persons annually.

Humboldt, in 1803, gave for the population of the city of Mexico,—

Whites, Spaniards .	2,500	Mestizoes . . .	26,000
Whites, Criollos . .	65,000	Mulattoes . . .	10,000
Indians	33,000		
			137,000

[1] Is a Mulatto. [2] As partaking of white Mulatto variety. [3] A step backward. [4] Mulatto variety. [5] Wolf or Zambo. [6] Variety of Zambo. [7] Coyote is from the Mexican word for wolf, probably a variety of Zambo. [8] Variety of Zambo. [The notes by W. B.]

In 1856, the city of Mexico may have contained 185,000 souls; it was observed that the Mulatto had nearly disappeared, and that very few Negroes were to be met with; and that this was owing in a great measure to the rarefied state of the air of the elevated table-lands of Mexico, where there was but little perspiration, consequently unsuited to the Negro. Dr. Nott says, like the Quadrumana of the tropics, the Negro is killed by cold, and is peculiarly liable to consumption out of the tropics. It has been stated that in the *tierra fria* and the *tierra caliente* there is a preponderance of males, but in the *templada*, or temperate, females are in excess. With the change from the Spanish to republican rule, freedom was offered to the Negro slave in the earlier part of the War of Independence, consequent on his entry into the patriot army, when many would be killed. Slavery has been abolished throughout Spanish South America; but as the Negro has now no one to take care of him, his free position is not in his favour, even as regards himself.

I may here mention, that it was no uncommon occurrence when the mines of Potosi and others in that very elevated region of Upper Peru (from 12,000 to 14,000 feet above the sea), were worked by the European Spaniards, to have their wives conveyed to the coast during the latter months of pregnancy, and they remained there some time after giving birth; for it was found that this removal was almost necessary for satisfactory parturition.

Central America contains the Republics of Guatemala, Costa Rica (anciently Chuichire), San Salvador, Honduras and Nicaragua, British Honduras, and Mosquitia. About 1753, it is reported, there were 93,000 Indians paying tribute in Guatemala, but with their families making 1,000,000; in 1794, 93,800, exclusive of Caciques and Indian nobles living in 959 settlements, this last number multiplied by five would give 1,000,000 Indians for the kingdom of Guatemala.

At the end of the seventeenth century, Garcia Palaez says, the entire population of the provinces of Nicaragua was 131,932; Comayagua, 88,143; Guatemala, 539,765; Chiapa, 62,258; total, 822,098, composed of Spaniards, Criollos, Indians, Mu-

lattoes, Zamboes; the Negro slaves are not mentioned. Juarros states that, in 1783, the population stood as follows:—

Guatemala had	Independent Indians*	543,985
	Spaniards	12,355
	Mulattoes	115,298
Nicaragua and Costa Rica,	Spaniards	10,000
	Mestizoes and Mulattoes	55,534
Honduras had	Spaniards	7,055
	Blacks and Mulattoes	35,556
Chiapa „	Spaniards	4,741
	Mestizoes and Mulattoes	26,567

Or, Indians, 543,985; Spaniards, 34,151; Mestizoes and Mulattoes, 284,955: total, 863,091.

In 1837, the Republic of Guatemala was said to have of Spaniards, or rather Criollos, 89,979; Ladinos, or Mestizoes, 619,167; Indians, 681,367: total, 1,390,513.

Squier, in 1858, gave for the entire population of Guatemala, 850,000; San Salvador, 433,000. Nicaragua, Whites, 30,000; Negroes, 18,000; Indians, 252,000: total, 300,000. Costa Rica, 135,000. In all, 1,718,000.

For 1862, the following is the best I can make out for the rather quarrelsome populations of Central America:—

1. Guatemala.	Whites, principally Criollos	190,000
	People of colour, as Mestizoes, Mulattoes, and Zamboes	320,000
	Negroes	10,000
	Indians	965,000
		1,495,000
2. Honduras		380,000
3. Balize, or British Honduras		20,000
4. San Salvador		60,000
5. Nicaragua		400,000
6. Costa Rica		215,000
7. Mosquitia		50,300
	Total Population of Central America	2,225,000

* Gage, in 1771, wrote, "However oppressed the natives of Guatemala are by the Spaniards, they increase so rapidly that the latter begin to fear them.

The lower and hotter lands of Central America, when compared with much of Mexico, are more congenial to the Negro, Mulatto, and Zambo. Squier says, "All observers agree that the Whites decrease in Central America, not relatively, but absolutely; whilst the pure Indians increase, and the cross-breeds, the Ladinos (Mestizoes), gradually approach the Indian type. Four-fifths of the population are employed in agriculture, the remainder in commerce, mines, and manufactures. Nicaragua claimed at one time Mosquitia, which view was rejected by England, and at the request of the chief of Mosquitia, acknowledged him as king about 1856. Here Indian blood predominates; but with the refuge of runaway Negroes many Zamboes have been produced, and with the visits of the Whites, Mestizoes and Mulattoes have appeared.

Scherzer gave, for 1857, for Nicaragua 10,000 Whites (say Criollos), 15,000 Negroes (Mulattoes and Zamboes), 80,000 Indians, and 145,000 Mestizoes. Capt. Pim, R.N., in his *Gate of the Pacific*, gives as follows, in 1863, for the population of Central America:—

1. Guatemala (very few Whites, few Negroes, Indians two-thirds)	800,000
2. Honduras and Bay of Islands (many Whites, some of Carib blood)	350,000
3. British Honduras (principally coloured people) .	20,000
4. San Salvador	290,000
5. Nicaragua (one-half Indians, the other half mixed breeds, very few Whites)	300,000
6. Costa Rica	135,000
7. Mosquitia (very few Whites, Indians, 20,000, Caribs, Negroes, Mulattoes, and Zamboes) . . .	40,000
	1,935,000

New Granada, or Granadian Confederation. At the period of the conquest there was, in all probability, an Indian population of eight to nine millions. In 1860, after examining the best sources, I gave the following in my work on *South American Antiquities, Ethnology*, etc. (Trübner and Co., London):—

Whites or Criollos		450,000
Quadroons and Mestizoes, called Whites, and by their own writers, "intelligent and active" . . .		1,029,000
Mulattoes and Zamboes, "strong, brave, and intelligent"		383,000
Negroes, "patient, distrustful, voluptuous" . .		80,000
Indians, Christianised . . .	310,000	
Indians (wild) who are "patient, suspicious, frugal"	120,000	
		421,000
		2,373,000

I may here mention that I do not consider either sex of the Indian to be of amorous nature. Their families are not large; but this may be caused in some measure by the female's want of care and comfort. Lord Kaimes, about a hundred years since, wrote: "The frigidity of the North Americans, men and women, differing in that particular from all other savages, is to me evidence of a separate race" (*Types*, p. 297). Mr. Vigne, in his *Travels in South America*, 1863, ii, p. 172, when speaking of the Indian of Riobamba in Ecuador, states, that he does not always cohabit with his wife, but at intervals they remain together for four or five days, retiring to a temporary hut. It is said that catamenia appears at eighteen to twenty, ceasing at forty, in the females of the North Americans.* With regard to the Negro species, it has here been called "voluptuous"; but libidinous is a better word to express its sexual desires. This brings me to an examination of a portion of Don José M. Samper's "Reflections on the Revolutions and Social Condition of Spanish America" (in Spanish), published in the *Ambos Mundos* periodical, in London, in 1861-2, my own remarks being in parenthesis. Samper commences by stating that the object of the Conquistadores was an armed speculation; they destroyed the greater number of the natives, and brutalised the remainder.† (I will except a few nations, however, taking the Araucaños of Chile, perhaps, even at the present time, as the most indomitable. Ercilla, the Spanish epic poet, in his

* Waitz, at p. 153 of his *Anthropology of Primitive Peoples*, has this passage, "The scanty prolificacy of the native women (of America) has also been mentioned as a principal cause of the decay of the race, and this phenomenon has been attributed *to an original defect of organisation*, or some mysterious cause." With polygenistic views, I should not call this a "defect," but in conformity to their own peculiar organisation.

† Shiploads of Indians were sent to Spain, as slaves, as early as 1495.

Araucana, poetically describes the physical characters of his Indian enemy, Lautaro, at the period when the Spaniards first entered Chile.

After the conquest and great butcheries of the Indians, came the introduction of Negro slaves from Africa,* then followed the rule of the Jesuits, the Inquisition, and the general despotic laws of Spain. Spain at the time of the conquest was warlike and fanatical, and could not sympathise or understand the civilisations of Mexico, Bogotá, or Peru, so she destroyed them. The Spaniard was a brutal fighter, not a colonist (Pizarro himself may be taken as a good illustration of the former.) Good laws were sometimes issued from Spain; but on their reception by the colonial authorities, the general reply was, "we obey, but do not comply."

Those of the early Conquistadores, who were not killed or died in America, returned to the mother country, often leaving children (Mestizoes) by Indian mothers. Then came the black African slave of both sexes. Whites, Indians, and Negroes have mixed, producing endless varieties. (I shall have again to refer to what has for a long time appeared to me that something detrimental, physically and morally, has been going on by this mixture of the three species, since about A.D. 1500, producing at times repugnant varieties among the Zamboes, and especially from the Indian and negress. The *in and in* breeding of the Mulatto variety seems soon to approach sterility. Nott, in *Indigenous Races*, says,—"In the ultra-tropical parts of America, as well as in its southern or tropical states, Mulattoes produced by intercourse between exotic Europeans of the white race, with equally exotic African females of the black, die out, unless recrossed by one or other of the parental stocks, in *three or four generations*." This looks like a general rule in connexion with the several species. Had the white man and Indian female only mixed, a better variety—the Mestizo—would have been the result; but even here it may be a question how long prolific character would have been persistent in

* About 1454, the Portuguese gave a horse for ten Negroes to the Arab who made war to obtain them.

the variety. There is reason to believe that the difficulty in rearing Mestizo (and even Criollo) children, in many portions of the New World, may be one cause of the unfavourable increase of population; also, that unprolific varieties are produced, and not prolific races.) Samper continues that, before the conquest, the inhabitants of America consisted of races, and innumerable varieties as regards colour, the red, reddish, bronzed, copper-colour, brown, nearly black (not the negro-black), yellow, and some "blanquecinos," or whitish (not the European white*). It is also observed by Samper, that the Indian of the Llanos, in deep tropical valleys and on the coast of New Granada, is of a red colour; on the slopes of the Cordilleras, copper or yellowish; on the table-lands, "algo atezado," somewhat blackish. Then, as to their voice, form, height, customs, etc., they were in infinite variety. (I may here observe, that scientific examinations of the above would be valuable contributions to the anthropology of the red man, and would shed much light when comparing him with other species: see what difference there is in the osteology alone of the white, red, and black species.)

Under the Spaniards, to the European was allotted all the principal public employments in the colonies; they composed the ranks of the higher clergy, merchants, landowners, and miners. The Criollos became attorneys, inferior clergy, small proprietors, artisans, and shop-keepers. The Indians tilled the land, were tributary, servants, and miners. The Negroes, Mulattoes, and Zamboes did the more heavy work.

At the commencement of the War of Independence, about 1810, the three races (species) are said to have stood as follows in Colombia, then composed of Quito or Ecuador, New Granada, and Venezuela.

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* In some works on ethnology, "White Indians" are mentioned as existing in America. I do not believe there are any. During the former wars of the Araucanos against the Spaniards, girls and women of the latter were often captured, and had to live with the Indians. The wild Jivaros of Quito, and some few others, killed their male Spanish prisoners, but kept the females. The progeny of the Indian with a white woman would be a Mestizo, but is rather a rare variety, the Indian being repugnant to the white woman.

	Whites.		Indians.		Negro Slaves.
Quito	157,000	...	393,000	...	8,000
New Granada	877,000	...	313,000	...	70,000
Venezuela	200,000	...	207,000	...	60,000
	1,234,000		913,000		138,000

Giving, then, a population to Colombia of 2,285,000. (In 1824, I find the following given for Colombia:—

Whites (Criollos)	600,000
Men of Colour (Mestizoes, Mulattoes, and Zamboes	720,000
Negroes	470,000
Indians	854,000
	2,644,000

In regard to Venezuela in particular, this mixture of species has produced at times the most violent democracy, not liberty. True liberty belongs rather to the white races of Europe; and imported white nationalities, say even into the United States, are difficult to settle down into seriously law-obeying people.) Samper continues. "In South America, the races of Shem, Ham, and Japhet have embraced fraternally, tending to reconstitute the unity of the human family." (I should think this monogenistic view of the subject must be very satisfactory to the mixed breeds.) He continues. "Admirable phenomenon! harmony in diversity" (?) (My experience leads me to an opposite conclusion. This democracy of the Criollos and mixed breeds has led, excepting in very few instances, to military despotism, and almost continuous anarchy in the Spanish American republics. If the mixed white races in the United States find it impossible to go on rationally with their democratic notions of government, much more so is it for their brethren in Spanish America.) Samper indicates a "new race," forming in Spanish America by the union of Spaniard, English, French, German, Italian, etc., with the Spanish Criolla. (This race of the white species will have modern European instincts, and will not mix, it is to be hoped, with the Indian or Negro species; and should a sufficient number of these ever exist in the Spanish American States, they will become an influential and perhaps a governing party.) Samper, and those who think with him, will not agree with my views,

viz., that the progeny proceeding from a mixture of the white, Indian, and Negro species, appear, by breeding *in and in*, to show signs after awhile of sterility. If the physical powers become deteriorated, the moral must follow the same course.

The following are the present ethnographical zones, according to Samper, in New Granada :—

1. Criollo of Bogotá . . . } and of the other cities : White.
2. Criollo of Antioquia . . . }
3. Pastuso Indian . . . . . } Indigenous.
4. Indian of the East Cordillera }
5. Mulatto
6. Llanero—a Mestizo, equivalent to the Gaucho of the Pampa of Buenos Ayres and Guasso of Chile.
7. Zambo.
8. Negro.

After Popayan (Payan) was conquered by the Spaniards, two hundred Jewish families, having had Romanism forced upon them in Spain, were exiled to this interior portion of South America. Here, then, we now have a Criollo population —some of them probably Mestizoes—with oriental characteristics, which Samper calls a fine and interesting race, that they are clever merchants, and look sharp after the cent. per cent. The Pastuso Indian is a demi-savage, low of stature, bronzed, has a stupid look, cunning, but laborious; at times perfidious and fanatical; he is Romanised, and makes a good guerilla soldier. The Chibcha Indian in appearance is not unlike the Pastuso, but his *morale* is better; he makes a poor guerilla, but a good soldier. "It is evident," says Samper, "that the mixture of Spanish, Indian, and Negro has produced in New Granada most commendable mixed castes, independently of their defective education: this rule is applicable to all South America."

The Mestizo types of the Guache and Orejon of the tableland of Bogotá are favourable specimens, as is also the Japanga of Popayan, the Guantero of Medellin, etc., etc. The Mulatto and Quadroon display more energy than the Mestizo; and the Mulatto castes will be the most secure and fecund elements of civilisation in the New World (but which is not my opinion). The Llanero is a Mestizo; he is dark, thin, and

bony. The Zambo, of rosewood colour, is in New Granada principally employed as a boatman, and is a degraded and ugly variety.* He is seen in all his characteristics when poling the champan, or flat boat, on the rivers,—in his obscene dances,—and in his hut, reposing, nearly naked, in supreme indolence. Samper concludes: "Such are the most notable types of Hispano-American society, resulting from the mixture of Whites, Indians, and Negroes, each appearing necessary to each other."(?)

Samper, in the appendix to the *Reflexiones*, observes, "it is generally stated that, at the period of the conquest of New Granada, there were from 7,000,000 to 9,000,000 Indians." There were, in 1860, only 500,000 of pure blood, and still wild, and 500,000 mixed with white and negro blood. In 1809, just before the War of Independence, the population may be placed as follows, excepting the wild Indians:—

Whites (Spaniards and Criollos) and white Mestizoes	877,000
Indians (pure)	313,000
Mestizoes (dark) including Mulattoes and Zamboes	140,000
Negro slaves	78,000
	1,400,000

Fifteen years of war carried off more than 200,000 males, and in 1819 a great number of Spaniards left the country, so that in 1825, about the end of the war, the census gave for the population 1,228,259, shewing a diminution of 171,741 in fifteen years. In 1835, the census gave 1,686,038, but it was supposed that 1,900,000 was nearer the mark. For 1860 Samper gives as follows:—

Whites and Mestizo Whites	1,537,000
Indians (some) with little white blood	600,000
Mestizoes (Mulattoes and Zamboes)	473,000
Negroes (free)	90,000
	2,700,000
Wild Indians	270,000
	2,970,000

Samper says, "This shows that the population of New Granada increased 20 per cent. in the first twenty-five years; and

* Emile Souvestre, in his *Le Monde tel qu'il sera*, says, "La fraternité générale amène la laideur universelle."

that in the second period of twenty-five years (from 1835 to 1860) the population had increased 60 per cent., and this without foreign immigration." (?) Also, that in the same period of fifty years, the

Whites have increased	600,000
Indians, more or less pure	287,000
Mestizoes and Mulattoes of various sorts . .	333,000
Negroes	20,000

At present the distribution of the population of New Granada is as under :—

On the table-lands	900,000
On the slopes of the Cordilleras . . .	650,000
In the tropical valleys and coasts . . .	1,150,000
	2,700,000

In speaking of the very great differences of elevation above the sea, and their inhabitants in New Granada, Samper alludes to those formidable breaks in the land such as that through which falls the cataract of Tequendama, calling it a sort of climatological and ethnological scale,—indeed, a species of *ethnometer*, —affording a measure of differences in vegetation, as well as that of the several varieties of the human race, their manners, customs, and occupation in relation to the peculiar topography of country, and that in a very short period of time one may ascend from the tropical regions to the temperature of the polar.

Venezuela. I am assured (1863) by a Venezuelan gentleman that the population of his country is as follows :—

Whites, as Criollos, and some few foreigners .	400,000
Zamboes very many, few Mestizoes, Negroes, and Mulattoes—the Zamboes in particular very turbulent	900,000
Indians, Guaranos, Caribs, and Goijiros . .	40,000
Immigrants from the Canary Islands . .	40,000
	1,380,000

Some Coolies have been imported; but the Canary islander is better suited to the climate of Venezuela as a labourer, mechanic, etc., and they become rich. Spain of late years has prohibited emigration from the Canary Islands. Statistics as to the number of Coolies and Chinese imported, the percentage of deaths among them, and the number who have returned to

their respective countries, would, I think, show that the change of climate, and the work imposed on them in those portions of the New World they have been taken to, has not been at all favourable to them.

Ecuador. A late census is said to have given—

Whites or Criollos . .	200,000	Indians	500,000
Mulattoes . . .	50,000	Negroes . . .	8,000
Mestizoes . . .	450,000		
Zamboes . . .	50,000		1,258,000

The hot and humid coast is inhabited by Negroes, Mulattoes, and Zamboes; the healthy table-lands by the Criollo, Mestizo, and Romanised Indian; the eastern portion down to and on the Amazons, by wild aborigines.

Peru. In 1795, the population of the country, including Upper Peru—now Bolivia—was supposed to be—

Whites, Spaniards, and Criollos	136,311
People of Colour—Mestizoes, Mulattoes, and Zamboes	285,841
Indians	608,911*
Negroes (then slaves)	40,336
	1,071,399

In 1825, 1,900,000 was given by the authorities for Peru and Bolivia. Dr. Hamilton, who resided many years in Peru and Bolivia, has stated that in 1840 there were not 3,000,000 in both countries; that the average number of deaths annually in Peru was much greater than in the temperate climes of Europe. One out of seventeen children died in Lima, the capital; this was three times more than that of London. In 1834, in a parish in South Peru, comparatively healthy, with a population of 6,000 souls,—

Births	Criollos 62	355	Deaths	Adults 199	323
	other classes 293			Infants 124	

Marriages, 42.

All who died under seven years were classed as infants; but there was reason to believe that the foregoing report did not include the whole number of infants buried, for the rate of infantile mortality among the lower classes in Peru is very great. In 1860, the stated population of Peru was—

* Barry, in *Noticias Secretas*, says, 600,000; and that at the time of the conquest there were five to six millions.

Whites (Criollos)	240,000
Mestizoes, Mulattoes, and Zamboes . .	350,000
Indians (true Peruvians)	1,600,000
Negroes	40,000
	2,230,000

Paz. Soldan, in his *Geografia del Peru*, 1862, gives, including, I suppose, the Indian population of Loreto, 2,300,000. There is now a fair sprinkling of English, French, German, Italian, and Spaniards in the country, as merchants, miners, shopkeepers and artisans; some of these marry Criolla females. Chinese have been regularly imported for years past as labourers for the Guano Islands, and the various estates on the coast. Polynesians, some 2,000 in number, were kidnapped and taken to Peru. Easter Island, in 27° S., 109° W., was swept of its inhabitants, and a depôt made of that island., they were denominated "colonos," or colonists; however, the French authorities in Polynesia soon put a stop to this nefarious proceeding, and caused the Peruvian government to redeem those who had been sold; and three hundred and eighteen were sent back to the islands in August of this year, but very many died of small-pox. It was found that these Polynesians, known as Kanakas, did not know how to work, nor would they be taught; they also felt severely the change of climate and food, many dying of dysentery, others running away from their masters, or rather purchasers.* It will be observed, that the greater number of people in Peru, as to species, is Indian; then come the Criollos or White, and Negroes; these give rise to endless varieties in colour, and other characteristics, as seen in the Mestizoes or Cholos, Mulattoes, and Zamboes. In Lima, more than twenty-five distinct varieties are well known and distinctly named.

The Negros have been emancipated for some years; the Indians have been relieved from their tribute. Such were politic acts for military presidents like Castilla; for from these two sources soldiers were obtained in large numbers for his military promenades, and for his own protection. When sla-

* Mr. Latrobe stated at the reading of the paper on the "Frobisher Relics" at the Geographical Society, April 13, 1863, "that those Esquimaux who have been Christianised, and got into European habits as regarded food, did not thrive nearly so well as when under their old regime of blubber and seal oil.

very was abolished in Peru, the owners of estates, and the government, for the working of the guano in the Chincha Islands, procured much help from China; but the Chinese are not a satisfactory sort of people, and are very careless of life. A small German emigration was got to Peru, in the vicinity of the Amazons, but it has dwindled away, according to late accounts from Lima. Some Spanish Basques settled lately in N. Peru, as agriculturists, had difficulties with the Criollos, a fight took place, when some were killed on either side. The best account of the population in Peru will be found in Tschudi's *Travels* in that country, from which I make some extracts, adding some observations to the table of castes.

Possibly in no other place in the world is there so much variety of complexion and physiognomy as in Lima. From the delicately fair Criolla daughter of European parents, to the jet black Congo negro, people of every gradation of colour are seen living in intimate relation with one another. It is difficult to define the characteristics of the mixed classes, for their minds partake of the mixture of their blood. As a general rule, it may be said, that they unite in themselves all the faults without any of the virtues of their progenitors. As men they are generally inferior to the pure races, and as members of society they are the worst sort of citizens.

The white Criollos constitute less than one-third of the population of Lima, of about 100,400 souls. They are slender in figure, and of middling height. The men are feeble, and look prematurely old. They have a sort of sensual expression, effeminate, and disinclined to active exertion. Far superior to the men, both physically and intellectually, are the women. They are slender and rather tall, with elegantly formed feet. The Indians in Lima may number 5,000; they are active and industrious; many of them are shopkeepers and servants; they are reserved and suspicious; their intellectual qualities are far beneath those of the Criollo.

The Negroes (now free) in Lima form four-fifths of the population; those brought from Africa were called Bosales, and were far better than the Negro born in the country. In physical strength they were inferior to the latter, and are less lively. In Lima, and throughout Peru, the free Negroes are a

plague to society. Too indolent to support themselves by laborious industry, they readily fall into dishonest means of getting money. Almost all the robbers who infest the roads or the coast of Peru are free negroes. Dishonesty seems a part of their nature; and moreover, all their tastes are coarse and sensual. My opinion is that the Negro, in respect to capability for mental improvement, is far behind the European.

We will now consider the variegated mass of people of mixed blood who, in Lima (and all over Peru), form a considerable portion of the population. It is a rule, that the children bear the designation, denoting the same degree of mixed blood, whatever may respectively be the colour of the parents. The child of a Negro and a white woman is a Mulatto, the child of an Indian and white woman is a Mestizo. When a man of mixed blood marries a woman darker than himself, and his children thereby become further removed from the white tint, it is said to be *un paso atras* (a step backward).

The subjoined list shows the parentage of the different variety of half-castes, and also their designations (in Peru).

PARENTS.	CHILDREN.
White father and negro mother	Mulatto,[1] or pure mulatto; half white, half negro.
White father and Indian mother	Mestizo,[2] or pure mestizo; half white, half Indian.
Indian father and negro mother	Chino,[3] or pure zambo; half Indian, half negro.
White father and mulatto mother	Cuateron,[4] or mulatto variety; three-fourths white, one-fourth negro.
White father and mestizo mother	Creole,[5] or mestizo variety; three-fourths white, one-fourth Indian.
White father and China mother	Chino-blanco, or zambo-mestizo var.; one-half white, one-fourth Indian, one-fourth negro.
White father and cuarterona mother	Quintero,[6] or mulatto variety; four-fifths white, one-fifth negro.
White father and quintera mother	White (?),[7] or mulatto variety; nine-ninths white, one-ninth negro.

[1] Mulatto, from *mula*, a mule or hybrid. [2] Mestizo, from the Spanish *mezclar*, to mix. [3] Like the Chinese in colour. [4] Cuateron, or quadroon, as being the fourth remove from the negro. [5] In the West Indies the Creole is a mulatto: Criolla in Spanish meant the offspring of Spanish parents in the colonies. [6] As being a fifth remove from the negro. [7] "White" here is still negro blood.

PARENTS.	CHILDREN.
Negro father and Indian mother	Zambo,[8] or pure zambo; half negro, half Indian.
Negro father and mulatto mother	Zambo-negro, or zambo with white; three-fourths negro, one-fourth white.
Negro father and mestizo mother	Mulatto-oscuro, or zambo with white and Indian; half negro, one-fourth Indian, one-fourth white.
Negro father and China mother	Zambo-chino, or zambo variety; three-fourths negro, one-fourth Indian.
Negro father and zambo mother	Zambo-negro, or zambo variety, quite black; nine-ninths negro, one-ninth Indian.
Negro father and quintera mother	Mulatto-dark, or mulatto variety; four-fifths negro, one-fifth white.
Indian father and mulatto mother	Chino-oscuro, or zambo and white var.; half Indian, one-fourth negro, and one-fourth white.
Indian father and mestizo mother	Mestizo-claro, or mestizo variety; said to be often beautiful; three-fourths Indian, one-fourth white.
Indian father and chino mother	Chino-cholo,[9] or zambo variety; two-thirds Indian, one-third negro.
Indian father and zambo mother	Zambo-claro, or zambo variety; three-fourths Indian, one-fourth negro.
Indian father and chino-chola mother	Indian with frizzly hair, or zambo var.; four-fifths Indian, one-fifth negro.
Indian father and quintera mother	Mestizo, rather brown, or zambo var. with white; three-fifths Indian, one-fifth negro, and one-fifth white.
Mulatto father and zambo mother	Zambo (a miserable race), or zambo variety, with some white; three-fifths negro, one-fifth Indian, one-fifth white.
Mulatto father and mestizo mother	Chino-claro, or zambo variety, with some white; two-fifths white, one-fifth negro, one-fifth Indian.
Mulatto father and chino mother	Chino-dark, or zambo variety, with some white; two-fifths negro, two-fifths Indian, one-fifth white.

[8] Zambo, looks like an African word. In Spain pigeon-feeted people are called "Zambos." [9] Cholo is another name for very Indian Mestizoes. The two first items in this table are from Tschudi's *Travels in Peru*; I have added the two last and the notes.

Besides the half-castes here enumerated, there are many others not distinguished by particular names, as they do not in colour materially differ from those specified. Some of the Mulatto females have complexions brilliantly fair, but they bear the unmistakable stamp of descent in the short woolly hair.

Despite the republican constitution, there prevails throughout Peru a strong pride of caste, which shows itself at every opportunity. By all varieties the white skin is envied. The Indian looks with abhorrence on the Negro; the latter, with scorn on the Indian. The Mulatto fancies himself next to the European, and thinks that the little tinge of black in his skin does not justify his being ranked lower than the Mestizo, who, after all, is only an "Indio-bruto;" so called by the white Limeños. The Zambo laughs at them all, and says, "if he himself is not worth much, yet he is better than his parents." In short, each variety finds a reason for thinking itself better than another.

The Zamboes are the most miserable class of half-castes. With them every vice seems to have attained its utmost degree of development; not one in a thousand is a useful member of society. Four-fifths of the criminals in the city gaol of Lima are Zamboes. In moral nature they are below the Negro. The hair is very little longer than that of the Negro, and they have little beard. The Chinos are but little superior to the Zamboes, and some are hideously ugly. The Cuarterones and Quinterones, half-castes of fairer complexion especially, approximate to the whites, among whom they almost rank themselves.

It was hoped that the *Geografia del Peru*, by Paz. Soldan, of 1862, would have given some more information on the subject of population; however, this is all he says:—"The greater number of the people are indigenous, and preserve their language and customs. Another portion are the descendants of Spaniards; others, mixed more or less with Indians and Africans, giving rise to types of various colours and appearance, as the Mestizo or Cholo, offspring of white and Indian; the Mulatto, of white and African; from these come the tercerone, quateron, pardos, chino-colos, etc., born of mixed blood,

according as any race (species or variety) may predominate. We cannot say how many there are of each race, because we have no accurate details." This view of the case will please the soi-disant "Hombres Blancos" of Spanish America.

Many years since, being in a town in Southern Peru, at a *tertulia*, or evening party, politics were debated in loud terms in a circle composed entirely of mixed breeds; the principal question related to the *Tirania* of the then local authorities, who were looked upon as nearly Indians. My friends said, "Shall we who are *Hombres blancos*—white men—tolerate their *tirania*, they who are Indians? no, never." I had the temerity to ask, "Which white men?" They replied, *Nosotros, Hombres blancos*—we, the white men!

Bolivia. Dalence, a government officer, gave, for about 1855,—

"Whites and others" (these I conceive to have been Criollos, romanised Indians, and Mestizoes; very little, indeed, of the Negro element)	1,373,000
Wild Indians	760,000
	2,133,000

These "Whites and others" are very turbulent; and General Belzu told me, in 1860, that during his seven years of Presidency (or rather his mad dictatorship) he had quelled thirty revolutions. In 1858, the Republic of Mexico had been in existence thirty-eight years, and had had fifty-six violent changes of government.

Chile. In 1780, the Spanish government gave—Whites, as Spaniards, and Criollos, 80,000; People of Colour unknown, as Indians, Negroes, Mestizoes and Zamboes.

In 1858-60, the census gave—

Chilenos (under Spanish rule would have been Spaniards and Criollos. Mestizoes, as Guassos; very few Negroes and Mulattoes) . . .	1,439,120
Foreigners	19,669
Negroes	31
Indians in the south, as Araucaños . . .	20,000
	1,478,810

This large number of foreigners, 19,669,* is mainly composed of English and Germans, including a German colony in the south. The climate of Chile suits them; many have married Chilenas and settled in the country as merchants, miners, artisans, etc. Climate will have very much to do with the settlement of foreigners in the Spanish American Republics, the great majority of the States are too tropical for Europeans. Up to December 1862, the census gave for Chile—

Males	822,737
Females	826,894
	1,646,894

It was stated that since the last year there had been an increase of population of 20,605.

General Observations on Chile in 1862.—If we take into consideration the vast extent of territory in which the Spanish language is spoken, viz., from the south frontier of the United States to near Cape Horn, we see with but few exceptions disorder, anarchy, violence, miserable ambitions, nations who are unhinging and destroying themselves, and asking how a proper population is to be replaced, until we arrive in Chile, where we find a South American people in a progressive state. Is it that the climate there is so favourable to human life compared to the greater portion of Spanish America, which is unhealthy? Chile has the climate of Italy; it is bounded on the north by the desert of Atacama, on the west by the Pacific Ocean, on the east by the Andes, and on the south by Cape Horn. It is a very rich mining and agricultural country. Here the Spaniards drove those Indians they could not slaughter into their fastnesses, where they remain, some 20,000, to this day, and formed but few alliances with the female Indian, as in other parts of Spanish America, producing a caste (the Mestizo) which does not quietly settle down. Then Chile was not a tropical land; thus it did not require those large importations of negro slaves: in a word, it is almost of pure Spanish descent. Then, since its separation from Spain, very many Eu-

* Valparaiso, the principal port, contained in 1863 70,000 to 80,000 souls, some 16,000 being foreigners.

ropeans have married Chilenas, and their progeny is of a satisfactory character, there being no Indian or Negro blood there. The immense advantage of a country possessing a pure race can only be understood by those who have resided for a time in countries populated by mixed-breeds. Thus, while the greater portion of Spanish America, where there is a large body of mixed-breeds, is in a state of anarchy, Chile is tranquil and pacific, increasing its commerce, its riches, and its population; and if now and then it experiences one of those periods of political excitability characteristic of the Spanish race, the attack is but of short duration, and the progressive march of the nation goes on; whilst the other republics are mainly military oligarchies, having no other element of power but the bayonet. Then, for years past, the presidents of Chile have been civilians.

Let us see what some of the results have been. Wealth and population are increasing rapidly. In the last thirty years, landed property has risen tenfold; its ports are scenes of the greatest activity; mining and agriculture are most prosperous; the public treasury has always a surplus; public works of great magnitude are continually going on; a railway, starting from the capital in a south direction, is already open for many miles, and contracts are now making to extend it very considerably; the railway, with serious cuttings and tunnels, from the capital to Valparaiso, some 150 miles, is finished; the railways at Copiapo pay dividends of 20 per cent.; a railway is constructing at Coquimbo: these are the great industrial operations. A cathedral is building in the capital which, when completed, will be one of the finest structures in South America; for from Italy are coming seventy large marble pillars. Santiago may be called a city of palaces. Education is extending, particularly among the poorer classes. The government has caused to be formed an acclimatisation garden for foreign plants and trees, to be given out to those who may require them, and is most anxious to invite European immigration.

In the month of January 1863 (summer), there had been some extra mortality in Santiago the capital (2,067 feet above the level of the sea), and out of a population of 100,000 souls,

198 men, 168 women, and 669 children had died, and this was when many had left the city for the country. Epidemics, sometimes of a severe character, occur in South America; and if full credit can be given to old writers, there have been very fatal ones, attacking both Spaniards and Indians; these have been called "pestes." The local diseases in the more tropical portions are agues, bilious and yellow fevers, at times of a bad character. The imported diseases are principally the measles, whooping-cough, and small-pox,* which fall heavily on the Indian population. Much has been written on the subject of syphilis having been brought originally from America. I believe that those Indians only who have been in contact with Europeans have contracted it from them, and that those Indians who live in their wilds are entirely free from any such disease. I fear that this scourge, introduced by Europeans, is thinning off the people of Polynesia; and from my own explorations among the Indians of Tierra del Fuego, the disease has been communicated by sealers and whalers, who have been known to take away the squaws for a time.

The Argentine Republic, or La Plata, is composed of thirteen confederated provinces. When this country was first discovered by Europeans, the district of Buenos Ayres was occupied by the Querandis, from whom descend the Pampa Indians; the mouth of the Paraná and its islands were inhabited by the Guaranis. On the northern side of the Plata were the ferocious Charruas; and on the islands in the Uruguay, the inoffensive Chavás. In 1536, the Indians made peace with the Spaniards; one clause of the treaty was that Indian women should be given to the intruders; Ayolas, the general, had seven, each soldier two, and this was the origin of the Mestizo variety in this country. In 1558, under the government of Irala, as the Spaniards had taken no females with them, some married Indian women, others had concubines; Irala himself had children, so say historians, by seven sisters! In 1542, the Lenguas, who were a fine tribe, and their women beautiful, had to give up many of them to make peace with the Spaniards.

* About 1797, it was stated, that nine-tenths of the North American Indians were carried off by small-pox, and many killed themselves from grief at being disfigured.—Waitz, p. 145.

In 1744, the first census gave for the city of Buenos Ayres 11,200 souls, and the surrounding country to the river San Boroudan in the south, 6,044. In 1770, in the province of Buenos Ayres there were 22,007 souls, composed of 3,639 white men (Spaniards, 1,398, foreigners, 456, and Criollos, 1,785); white women, 4,508; children, 3,985; army, 4,770; clergy, 942; and slaves (probably Negroes), 4,161. In 1778, the city and surrounding country had 37,679; Cordova, 38,570; Indians about Cordova, 5,482; Paraguay, 93,972. In this year 700,000 to 800,000 hides were exported. From 1792 to 1796, in 268 vessels were shipped 3,790,585 hides of cattle, and 78,800 of horses. In 1806, the population of the city of Buenos Ayres was 60,000. In 1812, Negro slavery was abolished; numbers were turned into patriot soldiers, fought hard, and very many fell. Sir W. Parish gives for 1837-47, for the Confederated Provinces, 820,000; Paraguay in 1840, 220,000; the Banda Oriental, 80,000; for the Independent tribes in the Gran Chaco, Pampas, and Patagonia, 50,000 to 100,000.

In 1844, it was stated that the population of the city of Buenos Ayres had more than doubled in twenty-five years, and that the number of inhabitants in the city was 110,000. In 1863, 150,000. For 1824 we have the following division of the population, according to Rugendas;—

Whites, principally Criollos . . .	475,000
Men of colour (Mestizoes, Mulattoes, and Zamboes)	305,000
Negroes (free)	70,000
Indians	1,150,000
	2,000,000

This must have included Uruguay and part of Paraguay, or there must be an error as to the amount of Indian population. The present population are principally white; then follow the Mestizoes, including the Gaucho, who lives almost on horseback, and Indians; some of whom are romanised, others wild. The Negro element is dying out; for the white man can work in this climate, and become a farmer, and herdsman of cattle, horses, and sheep, which are most profitable occupations.

In 1863, I make the population to stand as under :—

Argentines (as Whites, Mestizoes, and Christianised Indians) ; also a great number of foreigners, viz., English, French, Germans, Italians and Spaniards, as cattle-farmers, merchants, tradesmen, and shopkeepers, say 20,000 to 30,000	1,750,000
Wild Indians	50,000
	1,800,000

Paraguay. Dean Funes, some years since, wrote thus of the mixture of species in this country -—

1. White European woman, or a Criolla, and Indian male, the produce is a Mestizo. The males of this mixture have a beard, although the father had none.

2. White woman and Mestizo husband produce the Quarterona or Quadroon.

3. White woman and male Quadroon produce the Octaroon.

4. White woman and Octaroon produce the *Puchuela*, and is not to be distinguished from the European.

For the present population 1,337,431 is given.

In some of the towns and their vicinity, live the Whites and a large number of Mestizoes ; but the great body of the people are Guarani Indians. There are no Negroes, consequently no Mulattoes or Zamboes. In the *Anthropological Review* for August 1863, it is stated, that a German colony was founded in Paraguay in 1535, by the soldiers of Charles V, who since that time had received no addition of a German element. These Germans are to this day perfectly like the Germans of Europe. Waitz, writing of Paraguay in 1835, observes, that Indian women married to Europeans breed better than with men of their own stock, though they suffer more during delivery. Their being more prolific with white husbands may be owing to their improved mode of life.

Uruguay, or Banda Oriental. In 1826, it had only 60,000 to 70,000 ; in 1835, 140,000 ; in 1842, 240,000 ; in 1860, 240,965. Being a healthy country, foreigners now form a large proportion ; as French, Spanish, and Genoese. A population is now springing up, having energy and intelligence, and imbued with progressive modes of thinking. There is but very little of the Negro element ; and white men can work in

this climate, or occupy themselves as herdsmen and sheep-farmers. Present population, 1863, 300,000.

Brazil, Empire of. Rugendas gave for the population, in 1835, Whites, 843,000; Men of Colour, 628,000; Negroes, 1,987,500; Indians, 300,000: making 3,758,000. Adams, in his *Statistics* for 1856, gives 7,677,800, nearly one-half being Negroes, some still in slavery, and immigration of free labour encouraged (Chinese and Coolies). The whites are of Portuguese descent; and many foreigners, as Germans and French, form about one-sixth of the whole, the rest were Negroes, Mulattoes, Zamboes (called also Cabourets), and Indians. There may be some 500,000 Indians; these are divided into Mansos (or tamed) and Tapiros (or wild), both low in the scale of humanity. In 1862, the population was about 8,000,000.

Spix and Martius give an account of the Cafusos (query, Coafusus, or resulting from a confusion), so called by Portuguese, they are a variety springing from the Brazilian Indian and the runaway Negro (Maroons). Many live in the solitary plains bounded by the forests of Tarama; they are Zamboes, but have been erroneously called Mestizoes. I am informed that there are German colonists amounting to over 10,000, and this number appears to alarm the government.

The Guayanas (from the Guayanoes Indians). In 1835, Rugendas gave for the whole population—Whites, 3,421; Men of colour, 3,220; Negroes, 109,349; Indians, unknown, but as he gives 228,572 as the total, 112,931 might be for aboriginals. British Guayana is inhabited principally by people of colour. There are the six tribes of Indians who inhabit the adjacent country; some of them work for the planters. Coolies from the East Indies are imported as labourers: 163,000. Dutch Guayana is mainly populated by blacks. In the hilly parts dwell the Maroons, or runaway negroes. Jews are numerous, and in the interior at Savanna it is entirely inhabited by them; they cultivate their own plantations. In 1835, Whites, 8,525 (including 3,000 Jews); Negroes, 72,000; Indians, 6,200; Men of colour (Mulattoes and Zamboes), say 20,000; so without the mixed-breeds there were 106,725. Adams only gives 60,000 in 1862. French Guayana.—Rugen-

das gives for 1835,—Whites, 1,020; Men of colour (Mulattoes and Zamboes), 1,980; Negroes, 13,200; Indians, 10,000: in all, 26,500. In the unwholesome swamps here it is reported that French political and other offenders perish in numbers. Total for the Guayanas, 276,000.

West Indies. The aboriginal Lucayans and Caribs have entirely disappeared. Negroes (some still in slavery in the Spanish islands) constitute three-fourths of the coloured population, say of 4,000,000, the other fourth takes in every shade of Mulatto. The English, Spanish, Danish, French, and Dutch, and their descendants constitute the minority of white population. Humboldt says that slavery would have diminished since 1820 with great rapidity but for the fraudulent continuance of the slave trade. He says, in his time there were 2,400,000 Negroes and Mulattoes, and that from 1670 to 1825 nearly 5,000,000 of African Negroes had been imported. Cuba, in 1792, had 171,620 inhabitants; in 1859, 1,179,023. From 1849 to 1857, or eight years, there had been an increase of 48,562 slaves upon a total population of slaves of 323,896; and Lord Russell, who is doubtless kept well informed on this matter, tells us, that the "abominable traffic" introduces about 40,000 annually.

In 1860-61, the following was given for the population of the sugar and tobacco-producing county of Cuba:—

Whites	550,000
Coloured (free)	180,000
Slaves,* Negroes, and Mulattoes . .	400,000
Asiatics (Chinese and Coolies) . . .	38,000
	1,130,000

The slaves were valued at £3,000,000.

When Columbus discovered Cuba it contained a somewhat settled people, timid, and simple, of the colour of the Canary islanders, the women whiter. These lived in fear of the Caribs, from whom they differed materially. At Santo Domingo Columbus was struck with what he called the whiteness of the skin,

* Said, by American writers, to be very hard worked in Cuba, whilst in the Southern States of America they are well treated and humanised.

as well as their culture and inoffensive habits; circumstances which strongly contrasted with the reddish olive hue and ferocity of the Caribs of other islands and continent. The original population of Cuba was about a million; but in 1517 there were only 14,000. In 1553, Gomara tells us that there was *not one** pure *Indian* man on the island; however, the Spaniards had detained many of the Indian women. In Hayti there was another million. Sixty years after its discovery there were 15,000; but in 1729 the aborigines were extinct, some Mestizoes remaining. The Spaniards now imported the African negro, and from the female of that species has resulted the Mulatto variety. In 1859, Hayti had a population of 500,000, all Blacks. Santo Domingo 200,000, mainly Mulattoes, and a few Whites. The Caribs were expelled, particularly from the island of St. Vincent in 1796, at the cost of a million sterling, by the English settlers, to the island of Roatan, formerly Guayania. Already, from 1675, the shipwreck of a Guinea slaver near St. Vincent had infused so much exotic negro blood with the aborigines as to have again divided them into yellow and black Caribs. Transplanted again by the Spaniards to Honduras, these Mulatto-Caribs found themselves in the midst of another population of half-breeds; viz., the Zamboes of the Mosquito shore, formed since the seventeenth century, between survivors from the wreck of another African slaver

* Manley Hopkins writes, that it is not a hundred years since Cook discovered the Sandwich Islands. In the past it was most populous; at present it is in a rapidly decreasing state, and its future will have to be classed with the entire native depopulation of the West Indies. When the Sandwich islanders worshipped their feathered god Kukailmoka, and followed native customs, the islands may have had a population of 300,000; but with the introduction of the civilisation and diseases of the white man, the census of 1860 gave only 67,000! An American backwoodsman would call such a state of things being "improved off." At the commencement of the present year, 1863, 60,000 is given as the population of the Sandwich Islands; such was the scarcity of labourers for the sugar plantations that parties were earnestly urging the government to import Coolies from India. Mr. Lee, in a paper read this year at the British Association "On the extinction of Races," observed, that the rapid disappearance of aboriginal tribes before the advancement of civilisation (of the white species), was one of the most remarkable incidents of the age; from America to New Zealand, from Fremantle to Honolulu, this seemed to be the result of an approximation of different races (species). In 1815, the aborigines of Van Diemen's Land numbered 5,000; five years later, 350; in 1831, 196; in 1847, only 47, when these were removed to Flinder's Island; in 1855, but 16 remained.

and the Indians, and where also European buccaneers had not failed to bequeath white blood. Here laborious mahogany-cutters were produced; but in the ever-glades of Florida, crosses between runaway negresses and the truly barbarous Indians of that region, exhibit but incarnate, ferocious devils, hostile to civilisation. Recent events at Panamá (*Voyage of the Herald*, i, p. 302), confirm the deleterious consequences of such intermixtures, prognosticated years since by the naturalist Dr. Berthold Seemann. I have had somewhat to do with Zamboes, as workmen, in South America, and in any disturbance in which they took part, and when I happened to be in the vicinity, I always looked to see that my firearms were in order and handy. The drunken Indian or Negro may be managed, but a drunken Zambo is a very devil.

British North America. In Lower Canada, more than half the population are of French descent. There is a continuous British emigration to this region. The last statistics give for the whole, 3,488,620. Dr. Wilson in his *Pre-historic Man*, in the chapters on the mixture of Indian and white blood (I suppose in the Canadian region), repudiates the idea of the half-breeds being an example of the weakness and non-permanence of mixed races. But a reviewer, in the *Anthropological Review*, No. 1, May 1863 (p. 140), says, "It is true that these half-breeds are not likely to form a permanent race."

Russian America. The natives of Russian America are of the Esquimaux family (not of the American species), and American Indians, about 50,000; Aleutians* (not Americans), 8,700; total, 58,700.

Danish America, or Greenland, inhabited by Esquimaux, allied, probably, to the same Asiatic family, 9,800.

United States of America. The Anglo-Saxon settlers in the United States soon found that the aboriginal hunter and warrior could not be made a working man of, so they depended

* See Billings in 1833, and Wrangel, 1839. The Aleutians, Jakutes, Jukagires, and Kamschatdales, perish by brandy, famine, excesses, and, it may be added, by a systematic system of extermination on the part of the Russians. Numerous suicides, etc., promote the extinction of the Kamschatdales.—Waitz, p. 149.

entirely on themselves, neither did they form domestic alliances with the Indian female. Squier, with many others who have had good opportunities of studying the red man, have come to the conclusion that the American species, above all others in the world, seems most averse to everything like assimilation with other species; it may be said to be almost entirely unimpressible. Europe has poured its populations for three centuries on America, yet the pure Indian is little changed; he looks and acts like a distinct creature from the other species. Colonel Shaffner, in his recent *History of America*, observes, that great efforts have been made to civilise the Indian, as the European understands it; but there are insurmountable obstacles in the habits or temperament of the Indians. However, in Mexico and South America, some of the red men were comparatively romanised by the Spaniards, and, as they were settled nations, have held together. The Spaniards, however, found large masses of comparatively industrious nations, particularly in Mexico and Peru, living under regulated native governments, and for want of white women, immediately allied themselves to the Indian female, which gave rise to the great Mestizo variety. With the introduction of the negro slave came the Mulatto and Zambo.

In 1790, the white population of the United States was put down at 3,164,148; in 1800, 4,312,841; 1810, 5,862,092; 1820, 7,861,710; 1836, 13,000,000.

1837.	Whites	12,689,856
„	Coloured (free)	237,864
„	Slaves	2,791,588
	Total	15,719,308

There may be at present about 300,000 to 400,000* Indians in the United States. Nations and tribes are still perishing. In Marcy's *Prairie Traveller*, a new edition, edited by Richard F. Burton, there is the following in a note by Burton, which deserves consideration:—"I still believe that the North American aborigen, like the Tasmanian and the Australian, is but a

* In a recent account of the North American Indians, they are put down at 315,000 only; Shaffner gives but 130,000 "in the several States and Territories."

temporary denizen of this world, who fails to succeed in the first struggle with nature. He is, like a wild animal, to be broken, but not to be tamed. In his wild state, the Indian falls before the white man. Settled and semi-civilised, he dies of acute disease. He has virtually disappeared from the wide regions of the Mississippi; and the same causes, still ceaselessly operating, point to his annihilation when the prairie lands shall have become the grazing grounds of the Western World.

"It is a false sentimentalism that cannot look facts in the face, —an unsound reverence that models Providence after its own fashion. The best and wisest book of this, or perhaps of any age, I allude to the *Origin of Species*, which opens up the grandest views of life, is based upon a practical justification of the ways of Eternal Wisdom to man" (p. 140).

In the text there is a very humorous description of the red man:—"They are the most onsartainest varmints in all creation, and I reckon tha'r not mor'n half human; for you never seed a human, arter you'd fed and treated him to the best fixins in your lodge, jist turn round and steal all your horses, or any other thing he could lay his hands on. . . . The only way to treat Injuns is to thrash a lot of them well first, then the balance will sorter take to you and behave themselves."

In 1826, it was estimated that the following was the amount of population of the New World:—

Whites (Europeans and their descendants)	14,000,000
Indians	10,000,000
Negroes (mostly slaves)	7,400,000
Mixed-breeds	7,000,000
	38,000,000

However, in 1860 we are informed that, according to the best calculations, there was a population of 67,000,000; Spanish America claiming to have 24,121,000; the remaining 32,879,000 belonging to the United States. However, on reference to the table I have drawn up, 73,840,833 appears to be about the present number. From United States statistics for 1861, I find as follows, Whites and Blacks of all shades, the

Indian not mentioned, the population of the United States was put down at 32,000,000, including 4,136,000* foreigners who had become naturalised citizens; of this number there were only 210,000 in the Confederate States. That the population had augmented 9,500,000 in ten years. The Black and Mulatto (including say 500,000 free Blacks and Mulattoes) slaves were stated to be 4,000,000, and they had augmented in the same period 800,000; in the Free States the white population had augmented at the rate of 41 per cent.; but in the Slave States the Whites had only increased 32 per cent. (here we see that climate had something to do with it), and the slaves 22½ per cent., or less than 2½ per cent. annually. Mr. Walford, in a paper to the Statistical Society in March 1863, gave for the population of the United States in 1790, 3,929,827; 1860, 31,429,891. "The increase of population of the United States," he says, "is not so much the result of immigration as is generally believed; for during the last forty years the total immigration to the United States was 4,908,321; the increase of population in the same period was 21,000,000;" but from the statistics of 1861, I have shown that in a population of 32,000,000, there were 4,136,000 naturalised citizens. It is generally stated that there are 8,000,000 of Whites in the Southern or Confederate States, and 4,000,000 black and coloured; equal 12,000,000; if this be so, then the balance, or 20,000,000, including also some few blacks and mulattoes, may be called Northerners or Federals. It has been stated, that out of the four millions of black and coloured people in the Southern States, only one million were employed in cotton culture.

The amount of pure Negro population, slave as well as free, in the New World, in 1826, was put down at 7,000,000, and taking into consideration that there were imported during three

* The naturalised citizens had come from Ireland, 1,611,000; England, 430,000; France, 109,000; Switzerland, 53,000; Norway, 43,000; Turkey, 28,000; Denmark, 10,000; Poland, 7,000; West Indies, 7,000; Portugal, 4,000; German States, 1,198,000; British America, 250,000; Scotland, 105,000; Wales, 45,000; Holland, 28,000; Italy, 10,000; Belgium, 9,000; Mexico, 7,000; China, 5,000; Prussia, 3,000; Various Countries, 204,000; total, 4,136,000.—Kennedy's *Statistics*.

centuries more than 14,000,000, it is extraordinary that the Negroes should be so few in number at present, comparing them in some measure with the laws that rule the increase of white population, which has been so much more prolific. Has this resulted from their position of slavery, or the want of a sufficient number of females of their species? Formerly, in the United States, female slaves were allowed *five* weeks rest between childbirth and returning to the labours of the field; of late years it has been diminished to *three weeks*. It has been stated, that it was an object with some of the slave-owners in the United States to increase their numbers of slaves by "home management," from which has proceeded so many Mulattoes of every shade from this source.*

The Negro and Mulatto do not thrive in the Northern States on the score of health: these are free, but looked upon as a "mean" thing. Other Negroes and Mulattoes who have run away from the Slave States into the Northern, have about the same unsatisfactory position; but many are being turned into soldiers by the Federals to be used up. We have still to be satisfied as to the benefited position of the freed Negroes and Mulattoes from the United States who have settled in Liberia, under their own republican government; and if the climate is altogether congenial to those of the African species whose progenitors have been long from their native soil.

A French writer in 1844 speaks thus of the people inhabiting the United States (excepting the Indians). People of so many countries and of such diversity of character inhabit the United States, that it would be fatiguing to describe them. The descendants of the British predominate; they are like their progenitors for activity and application to labour, pride of country, and a desire of universal dominion. The character and customs of the inhabitants of those regions conquered by the French and Spaniards, are peculiar to themselves, and the

* The Mulatto, it is well known, bears a large proportion among the slave and coloured free population of the United States, thanks to the white blood flowing in their veins. "Since Anglo-Saxon sires have contributed so largely to the production of the present coloured generation, . . . a large proportion of the Southern population is the offspring of white men and coloured women." —See F. A. Kemble's *Journal of a Residence on a Georgian Plantation.*

Anglo-Americans (Northerners) do not truly sympathise with their southern brethren. The black and coloured people have no position in society whatever.

Just before the exterminating war now raging, the following, which I extract from Clyde's *Geography*, appears to be a good *résumé*. Until the beginning of the present century, the white population was, with the single exception of New York, where the Dutch element was very strong, almost exclusively of Anglo-Saxon descent; but since then it has received enormous accessions not only of the Celtic family from Ireland, Wales, and the Scotch highlands; but also of various continental families, particularly Germans. It has been calculated, that of persons who emigrated to the United States since 1790, and their descendants, nearly 4,500,000 were alive in 1850. In that same year of 1850, more than 2,000,000 persons in the United States were foreigners by birth; by far the greater part of these were British, Ireland alone having sent nearly 1,000,000. A farther mixture of families has resulted from annexation. With Louisiana, a population of French (Celtic?) origin was admitted into the Union, and a considerable number of Spaniards, with Florida, Texas, New Mexico, and California. All these, it is reported, easily amalgamate with each other, and the great distinction of race in the United States is that between the white and the black. At the period of the Declaration of Independence in 1776, there were only 500,000 slaves in the revolted colonies; there are now over 3,500,000 slaves, and about 1,000,000 free blacks and coloured people.

In the foregoing, I have confined myself to statistics and to the more marked physical characteristics of the people of the New World; but cannot bring myself to think that the mixture of the white, red, and black species produce other than varieties, such varieties not being very good specimens of humanity, if examined physiologically,* psychologically, or by their political history. The Indian is at home, living on his

* Observe only the osteological differences between the White and Negro; the skeleton of the latter is heavier, bones thicker, muscles larger, capacity of skull less, and fewer convolutions in the brain. Similar differences will be found when comparing the White with the other species and varieties of man. Paul Broca tells us that the white substance of the brain of the Negro

own soil, in his own climate; but he is doomed to disappear by the inroads of the white race. The Negro is fitted to the low tropical lands; but take him into the high table-lands, or into the Andes, and he suffers. The European and his descendants, in many portions of the New World, feel unfavourably the effect of change of climate, and to keep this race up to a robust standard, fresh immigration from Europe will be always necessary. Then, as to the political and moral character, I once intended to have examined into the causes of the continual revolutions in the Spanish American Republics, one of the principal causes I attribute to the mixture of species; but will now only advert to what is going on in that "late lamented institution, the nation of sovereigns," the United States of America, from the people of which extensive country, something better might have been expected than the most sanguinary civil war, or "American mutual slaughter," on record,—for here the belligerents are the white races of Europe and their descendants. Up to November 1863, it was calculated that the government of Lincoln had sent 1,500,000 men into the field.* The liabilities of the government were about £600,000,000. This is independent of ruinous loss to agriculture, trade, and commerce, to both North and South, and exclusive of the cost to the South of men and money. Lord Brougham observed at the late meeting of the Social Science Congress at Edinburgh, that "he attributed to the insane vanity and mendacity rampant in America, much of the calamity by which she is now afflicted."

Gliddon, p. 444, *Indigenous Races*, refers to Count Gobineau's

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is of a different colour to that of the European; and that the *pia mater* contains brown spots, which are never found in the European. At page 464, *Types of Mankind*, drawings are given of the brain of the European and American Indian. In the American Indian, the anterior lobe is small; in the European it is large in proportion to the middle lobe. In the Indian the posterior lobe is much smaller than in the European. In the American, the cerebral convolutions on the anterior lobe and upper surfaces of the brain are smaller than in the European. Quételet observes, that the American race has a greater breadth of chest and smaller feet than the European. If there are differences in the various species of humanity, ought we not first to suppose a difference in the germ of life, as well as in the fructifying principle. Should this ever be made out, it will be the *experimentum crucis* in favour of Polygenism.

* To March 1864 this war had already consumed over a million of men.

Essai sur l'Inégalité des Races Humaines, 1855, who, on examining the character of Lucius Cornelius Sylla, calls him surgeon, butcher, scoundrel. . . . The populace of Rome he wished to bring back to the manners and discipline of the olden time, resembled in nothing that republican people who had practised them. To convince oneself, it suffices to compare the ethnic elements of the days of Cincinnatus (B.C. 460) with those existing at the epoch when the great dictator lived (B.C. 138-81). It is impossible to bring back into the same framework two nations which, under the same name, resemble each other so little." Gliddon adds, "When ethnologists apply this excellent method of analysis to every nation, especially to these United States of America, they will obtain practical results undreamed of by literary historians, who believing in the "Unity of the Human Species," have neither any idea of these amalgamations of distinct races, nor of their natural and therefore inevitable consequences for good or evil."

The *Times* special correspondent makes the following observations on the "Typical Yankee :"—"There is certainly something striking about the prevailing American type. That long, lank, fleshless form, that straight hair, that stoop in the shoulders, that colourless face, those by no means bad yet somewhat harsh features, that high but flat brow, those pale, thin, compressed lips, that sad yet shrewd and coldly humorous expression, remind you at every step of that complex yet distinct original which the great Nova-Scotian stereotyped in 'Sam Slick.' To give the genuine Yankee a family air throughout the Union the costume at present in vogue contributes in no small degree. The fashion has lately sprung up, and it struck me on my arrival as an innovation at variance with all my reminiscences of American look. The true Yankee shaves his upper lip, and sometimes the edge of the nether one, allowing the beard to grow stiff and straight on the chin. It is the cut of beard that anyone may observe in the portraits of President Lincoln, and I should not wonder if it is the First Magistrate who sets the fashions in this Republican land, as King Charles I. or Henry IV did in their respective kingdoms, exercising the same spell as the Empress Eugénie had on the

skirts of ladies' gowns and on the frizzled fronts of ladies' coiffures in France. Nay, I shrewdly surmise that the peaked beard, *à la* Lincoln, is something like a political badge and cognisance in this country. Your true Republican, your out-and-out Abolitionist, is as sure to strike you by his pantaloon tuft on his chin as the old Puritan made himself known by his closely-cropped head and thick, bushy moustaches. Without any pretension to enter into a dispute about matters of taste, I may be permitted to say that the present fashion is, to say the least, an odd one, and the least becoming the American face that could ever have been invented. The dense mass of hair that incumbers the lower face, generally black or very dark, enhances, with no pleasing effect, the length of the bare upper lip—a feature by no means the most pleasing in the American countenance, as it is apt to be heavy and flat, with the corners of the mouth drawn deeply down towards the chin; seen at a distance, that Capuchin-like beard, contrasting with the blue and white shaven skin, looks like an unreal appendage, a masquerading disguise, and it wears rather absurdly with the high shirt-collar, the long, close-buttoned surtout, and the broad-brimmed hat, which very generally make up with it the strictly Republican garb."

In conclusion, I cannot help the expression of surprise that we do not hear our ethnologists and anthropologists refer oftener to Knox on the *Races of Mankind*, Nott and Gliddon's *Types of Mankind*, and their *Indigenous Races*. The first work is thoughtful and original; the second, elementary; but the *Indigenous Races* is one of the most valuable anthropological contributions we have as yet in our language, and published in the United States, containing as it does such researches as the following:—Distribution and classification of Tongues; Iconographic observations; Cranial characteristics; Acclimation, or the comparative Influence of Climate; Endemics and Epidemics; the famous Essay on the Monogenistic and Polygenistic views of Human Creation; the distinctions observed in the various groups of humanity, and particularly the translation from the first French edition (by Faye, Paris, 1846) of Humboldt's *Cosmos*, wherein that great philosopher endorsed the polygenistic

views of his brother William, but which portion is not to be found in the translations of Sabine or Otté in 1846. Carlyle styles this "flunkeyism" towards Anglo-Saxon popular credulity, so manfully denounced by the late Dr. Robert Knox, which both the English translators exhibit. Gliddon observes, as to the anonymous writer of *The Genesis of Earth and Man, etc., and whether the Varieties of the Human Species be of more than One Origin*, edited by Reginald Stuart Poole in 1856, "It inspires regret that one so truthful should be compelled, owing to the dreary atmosphere of national prejudices which surrounds him, to fight in the cause of plurality of *human origins*, and of diversity of races, with his visor down."

I have been led to make these Observations on the Past and Present Populations of the New World,—1. From the prime fact that America, when discovered in 1492, had over 100 millions of natives: at present there may be some ten or eleven millions; thus, some ninety millions have been destroyed by this sort of showing, directly or indirectly, by the white invaders. 2. That in the Spanish American colonies and Brazil, for more than three centuries, the white European (as Spaniards and some Portuguese) have not increased in numbers in any way approaching that of the Anglo-Saxon, etc., in the United States, which I attribute in a great measure to change of climate, Brazil and Spanish America being mostly tropical, but not so detrimental to the European constitution as India. 3. The fusion, or rather *confusion*, of the White, Indian, and Negro elements, particularly in the Spanish colonies, is unfavourable to strong, healthy, and prolific progeny, producing such numberless varieties of Mestizoes, Mulattoes, and Zamboes. 4. There has been a continuous cry from the South American republics for the last thirty years for European immigrants; but there have been two great drawbacks for a favourable response, first, the generally continued state of anarchy; and secondly, the climate, with its yellow, bilious, and intermittent fevers in many of the localities.* There are, however, exceptions to

* "Ethnological Society.—At the meeting of the society on the 4th of February, 1862, Dr. Hunt read an interesting paper 'On the Acclimatisation of Man,' in which he contended that the popular belief, that man can thrive

this state of things, namely, the Republic of Uragnay, to which a large Spanish and French Basque emigration has gone, and is doing well; in Chile foreign residents have good health, and a German colony is progressing; and I might indicate some other localities favourable to European constitutions, viz., the Argentine Confederation, say to breeders of cattle, horses, and sheep in particular; also, the table-lands of Mexico. 5. That mixed-breeds or varieties are not so prolific as pure species; and that some of the mixed-breeds seem to run into sterility. 6. That in many of the South American States even the children of European parents are reared with more or less difficulty, deaths of the young being much more numerous than in Europe. 7. The long War of Independence which raged throughout the length and breadth of the present Spanish American Republics, thinned the male population in particular; that war having terminated, the said republics, more or less, have had long periods of sanguinary civil war, which I attribute in a great measure to the character of its mixed population being unable to settle down. These are some of the causes which may account for the small proportion of industrial people in Spanish America. Such have been my views for years on this subject, having tra-

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equally well in the tropics or at the poles, was entirely fallacious. The conditions which prevent or retard the acclimatisation of man, he said, are physical, mental, and moral. Food is inseparably connected with climatal conditions, as also are the physical geography of the district, its elevation or depression with respect to sea-level, its soil, atmosphere, the quality of its water, the quantity of light, and the predominance of certain winds. Some plants are peculiar to certain regions, and if transplanted degenerate or die. So with man. In every region he is found organised in harmony with the climate, and if it were not so he would perish. The different races, also, present different degrees of acclimatisation, in accordance with their mental development; and every race had certain geographical limits, from which it cannot with impunity be displaced. He went into a great variety of detail and statistics, showing the influences of climate and the results of our colonisation. In all cases, not even excepting that of the Spaniards in South America, degeneracy and ultimate dying out appear to be the rule, the apparently most marked exception being the Jews. In conclusion, Dr. Hunt observed that, whilst so many mad schemes for colonisation were daily proposed, and men vainly boasted, in their pride, of the universal spread of the Anglo-Saxons, it was well to expose some of these delusions; and no greater benefit could be conferred on humanity than the elucidation of the laws which govern the so-called acclimatisation of man."—See Review of *The Influence of the Climate of North America, on the Physical and Psychical Constitution*, No. 1, *Anthropological Review*, May 1863, p. 180.

velled and sojourned in most of the countries of the New World.

Before I close, I cannot help referring to the remarkable work by Squier, *Notes on Central America*, at pp. 54-8 will be found the following rather startling conclusions :—"Anthropological science has determined the existence of two laws of vital importance in their applications to men and nations. First. That in all cases where a free amalgamation takes place between two different stocks, unrestrained by what is sometimes called prejudice, but which is, in fact, a natural instinct, the result is the final absolute absorption of one into the other. This absorption is more rapid as the races or families thus brought in contact approximate in type, and in proportion as one or the other preponderate in numbers; that is to say, nature perpetuates no human hybrids, as, for instance, a permanent race of Mulattoes.

"Second. That all violations of the natural distinctions of race, or of those instincts which were designed to perpetuate the superior races in their purity, invariably entail the most deplorable results, affecting the bodies, intellects, and moral perceptions of nations who are thus blind to the wise designs of nature, and unmindful of her laws. In other words, the offspring of such combinations or amalgamations (or confusions) are not only generally deficient in physical constitution, in intellect, and in moral restraint, but to a degree which often contrasts unfavourably with any of the original stocks. In no respect are these deficiencies more obvious than in matters affecting government. We need only point to the anarchical states of Spanish America to verify the truth of the propositions laid down, where we find a people (generally) not only demoralised from the unrestrained association of different races, but also the superior stocks becoming gradually absorbed into the lower, and their institutions disappearing under the relative barbarism of which the latter are the exponents."

Gliddon concludes his great contribution on the Monogenistic and Polygenistic theories with a passage from *Les Paradis Profanes de l'Occident* (Paris, 1856) : "Alongside of theology,

a new science is rising up, viz., the science of religions (or the science of searching for the truth as far as we are at present able). The world is (more) positive, because it grows older; but it has been credulous (ofttimes), insane, intoxicated with (false) poetry and superstition, (blindly) in love with that nature which we now-a-days cause to pass through the crucible."

Resumé of species and varieties :—

Species.	Whites	38,074,423
	Indians	11,014,710
	Negroes	12,122,030
Varieties.	Mestizoes	6,031,000
	Mulattoes	4,037,440
	Zamboes	1,563,230
		73,842,833

Character of population in the United States, British North America, Brazil, Mosquitia, West Indies, and Guayana :—

Whites (principally Anglo-Saxons, Celts, and Teutons)	31,496,040
Indians (Aborigines)	1,202,300
Negroes (Africans and their descendants)	11,926,000
Mestizoes (White and Indian)	7,000
Mulattoes (White and Negro)	3,207,440
Zamboes (Indian and Negro)	16,220
	47,854,940

Character of the population in the Spanish American States :—

Whites (principally of Spanish descent)	7,000,000
Indians (Aborigines)	10,000,000
Negroes (Africans and their descendants)	200,000
Mestizoes (Whites and Indians)	6,300,000
Mulattoes (Whites and Negroes)	987,000
Zamboes (Indian and Negro)	1,500,873
	25,987,893
	47,854,940
	73,842,833

DETAILS OF THE DIVISIONS OF SPECIES AND VARIETIES IN THE NEW WORLD FOR 1863.

Countries.	Population.	Whites.	Indians.	Negroes.	Mestizoes.	Mulattoes.	Zamboes.	Foreigners.
Mexico	8,283,088	1,300,000	4,000,000	8,000	2,300,000	345,000	300,000	Included with Whites.
Central America	2,225,000	250,000	1,000,000	10,000	725,000	125,000	115,000	(30,088)
New Granada	2,373,000	450,000	431,000	80,000	1,030,000	190,000	192,000	ditto
Venezuela	1,380,000	400,000	40,000	50,000	50,000	50,000	790,000	ditto†
Ecuador	1,258,000	200,000	500,000	8,000	450,000	50,000	50,000	ditto
Peru	2,230,000	240,000	1,600,000	40,000	180,000	70,000	100,000	ditto‡
Bolivia	2,133,000	210,000	1,400,000	Very few.	532,000	Very few.	Very few.	ditto
Chile	1,646 894	1,601,864	20,000	30	Includ. with Whites.	ditto	ditto	(25,000)
Paraguay	1,337,431	200,431	700,000	——	437,000	——	——	Some Foreigners.
La Plata	1,800,000	1,500,000	100,000	Very few.	200,000	Very few.	Very few.	Many Foreigners.
Uraguay	300,000	200,000	——	——	100,000	——	——	ditto
Brazil	8,000,000	1,000,000	500,000	5,000,000	——	1,500,000	Few.	ditto
West Indies	4,000,000	500,000	All destroyed.	3,000,000	——	500,000	——	ditto
British America	3,488,620	3,488,620	Few.	——	——	——	——	——
The Guayanas	276,000	7,420	131,920	121,000	2,000	6,440	7,220	——
Russian America*	50,000	Very few.	41,300	——	——	——	——	——
Danish America	9,800	——	——	——	——	——	——	——
Mosquitia	50,000	Very few.	30,000	5,000	5,000	1,000	9,000	——
United States.	32,000,000	26,500,000	500,000	500,000 (free) 3,300,000 (slaves)	——	200,000 (free)* 1,000,000 (slaves)	——	Very many. (4,136,000)
	73,842,833	38,039,335	11,014,719	12,122,030	6,031,000	4,037,440	1,563,220	

* Aleutians, 8,700; Esquimaux, 9,800. † Including also 40,000 Canary Islanders. ‡ Including also some Chinese.

On the Two Principal Forms of Ancient British and Gaulish Skulls. By John Thurnam, M.D.

The skulls from the circular barrows of England of the pre-Roman period, are mostly of brachycephalic or sub-brachycephalic type; this short and broad, or round, cranial form being found in tumuli evidently of the same epoch, though some of them contain implements and weapons of both bronze and stone, others of stone only. It is inferred with great confidence, approaching to certainty, that the people of South Britain, who, Cæsar tells us, had migrated from Belgic Gaul, were a brachycephalic and also a tall race. If the conical and bell-shaped barrows of South Wilts and Dorset, and especially those of the great Stonehenge necropolis, in the centre of the region of the Belgæ of Ptolemy, be not those of the very people who fought against the legions under Plautius and Vespasian, then we must conclude that their tombs are yet to seek. Not only were the most civilised people of Britain, at the beginning of the historical period, brachycephalic; but also the people of Belgic Gaul, whence they came, and likewise those of Celtic Gaul (who there is no proof differed ethnically from their neighbours to the north-east of the Seine and Marne) must have been a short or round-headed race.

In addition to the brachycephalous skulls, of which so many examples are described in the *Crania Britannica,* a less number of decidedly dolichocephalic crania have also been depicted. These are principally derived from the chambered long-barrows of North Wilts and Gloucestershire, being the district of the British Dobuni, the same tribe which, at the time of the conquest under Claudius, was subject to the great neighbouring tribe of the Catuellani. There is no well-authenticated proof that metallic objects, whether of bronze or iron, have in any case been found in the undisturbed chambers of these tombs, which, however, yield well-chipped flakes and arrowheads, and also axes of flint. The skulls from these barrows, which are those of a people of middle or even short stature, seem certainly the remains of a more ancient people than those who

raised most of the circular tumuli of this part of the island; though it might at first sight appear more legitimate to refer them, not to any pre-Celtic race, but rather to the people of the interior, who, in Cæsar's time, claimed to be autochthonic, and at an earlier date had also occupied the coast-districts, from which they had been expelled by the immigrants from Belgic Gaul. The Dobuni were, at least, a tribe with no claim to a Belgic or Gaulish origin, in the way in which the Belgæ, the Atrebates, the Regni, the Cantii, and perhaps the Catuellani, were Belgic; but in the time of Julius must have belonged to the "Britanniæ pars interior"; though to them, as to the other tribes of the centre of the island, the name of Celtic must be conceded, at least in the sense of their being a Celtic-speaking people.

When, however, we conclude that the dolichocephalic skulls from our barrows are more ancient than the brachycephalic ones, we find ourselves at variance with the French school of anthropologists. William F. Edwards, the distinguished teacher of that school, following in the wake of the historian Thierry, maintained that the physical characteristics of both a Gaelic and a Cymric race are still distinguishable in France. Those of the Gaelic, or older Celtic race, constituting his *Type Gall*, are said to be "a head more round than oval, round features, and a middle stature"; whilst those of the Cymric, or supposed secondary race, forming his *Type Kimri*, are "a long head, broad elevated forehead, and a high stature."* A careful perusal of this famous letter by M. Edwards will, I

* *Des Caract. Physiol. des Races Hum.*, 1829: reprinted, *Mém. de la Soc. Ethnol. de Paris*, 1841, tome i. M. Edwards adds some other characteristics of his two races. His words (pp. 54, 55) are:—"*Type Gall:* "Tête arrondie de manière à se rapprocher de la forme sphérique; le front est moyen, un peu bombé et fuyant vers les tempes; les yeux sont grands et ouverts; le nez, à partir de la dépression à sa naissance, est à peu près droit, c'est-à-dire qu'il n'a aucune courbure prononcée; l'extrémité en est arrondie, ainsi que le menton; la taille est moyenne" ("petite, mais assez robuste," 1842). *Type Kimri:* "Tête longue, le front large et élevé, le nez recourbé, la pointe en bas, et les ailes du nez relevées, le menton fortement prononcée et saillant, la stature haute" ("très-élevée et très-grêle," 1842). In his letter of 1829, M. Edwards said nothing as to the colour of the eyes or hair; but in his *Fragments d'un Mémoire sur les Gaëls*, written just before his death, in 1842, (*Mém. de la Soc. Ethnol.*, tome ii, p. 13, comp. p. 1), he makes some modification in his description of the two types; and adds to that of the *Type Gall:* "Les cheveux sont de couleur obscure, bruns on noirs." *Type Kimri:* "Les cheveux sont en général légers."

think, show the limited extent of his observations, and their insufficiency for the confident theory which he based on them. For the most part, however, his views are still received in France. In the Museum of Natural History at Paris, the skulls from ancient Gaulish tombs are marked as belonging to the one or other of these two races, *Type Gall* or *Type Kimry*, as they conform to a brachycephalic or a dolichocephalic form, with but little if any warrant from archæological evidence.*

In his work, entitled *Ethnogénie Gauloise*, M. Belloguet laboriously controverts the system of Gaulish duality of MM. Thierry and Edwards; the defects of which he sums up as, "first, the Cisalpine *Kimris* of these writers were really *Galls;* second, the two types could not have had the common (Indo-European) origin which is attributed to them; and, third, Edwards has forgotten the presence of the Germanic element in the north-east of France and in the Burgundian provinces." His own conclusions are, that the Celts of Gaul, including the Belgæ, were blonde, of high stature, and long-headed; and that mixed with them was another more numerous people with brown or black hair and eyes, of less stature, and round or short-headed. These he concludes formed a pre-Celtic race, often regarded as Iberian, but which he rather identifies with the Ligures, to whom he assigns a North-African or Berber origin. These pre-Celtic *brachycephali* he believes were sufficiently numerous to absorb the Celts themselves, "whose type," he says, "is no longer found in France. On the other hand, the Celts, as the more civilised race, communicated their language to those whom they conquered, but by whom they were themselves absorbed."† Such are the views of M. Belloguet; they are ingenious; but it cannot be admitted that they are

* See the remarks on this subject by M. Belloguet, who was informed by M. Serres himself "that he had no other theory on this subject than that of M. W. Edwards, and that he had named *Kimry*, the skulls of a long, and *Gall*, those of a round form." M. Belloguet continues: "Ainsi cette classification du Musée d'Anatomie, qui m'avait tant préoccupé comme pouvant faire loi dans la science, n'était qu'une application faite au hasard du système de la dualité Gauloise" (*Ethnogénie: Types Gaulois*, 1861, p. 160). The fullest description I have seen of the ancient Gaulish skulls in the Paris collection is in the work here quoted (pp. 171-177). We must regret the error into which the author falls (p. 172), in confusing and reversing the characters of the so-called *type Gall* and *Type Kimry*, in his description of the skulls from the "sepulchral gallery" or dolmen, at Meudon, near Paris.

† Belloguet, p. viii, 183.

the true explanation of the facts he has so diligently examined.

Certain parts of M. Belloguet's criticism rest, probably, on a solid foundation. This is especially the case with his objections* to the diverse physical characteristics of the Celts and Belgæ (*type Gall* and *type Kimri*), as taught by M. W. Edwards. I must, however, remark, that the strongest argument against such diversity is the express testimony of Strabo; who, after telling us that the Aquitani differed from the other people of Gaul in their bodily conformation, which resembled that of the Iberians; proceeds to say that the Belgæ and Celtæ participated in the same Gaulish exterior, or bodily form.† It is remarkable that in the introduction to the same edition of his work, in which the learned historian, M. Amédée Thierry, gives its due weight to this very passage, he should not perceive the inconsistency therewith of the views of M. Edwards, but should have welcomed them as confirmatory of his own doctrine of Gaulish duality,—a doctrine which he had based on historical and philological evidence, though to what extent it is well founded is still much controverted.‡ It is evidently most important to give their full force to the two passages of Strabo, in which he asserts the *common Gaulish exterior of the Celts and Belgæ;* for, taken with that of Tacitus as to the resemblance of the Southern Britons and the Gauls, they afford a trustworthy basis to the anthropologist who is engaged in the identification of the osseous remains of these peoples.

The learned anatomist of Stockholm, Retzius, also believed the Celtic type to be dolichocephalic; and he referred the brachycephalic skulls from ancient Gaulish tombs to a pre-Celtic, Turanian race, of whom he believed the Basques to be

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* Ibid., p. 90-91.

† Strabo, lib. iv, c. i, § 1. Τοὺς δὲ λοιπους, Γαλατικὴν μὲν τὴν ὄψιν. (Comp. lib. iv, c. 2, § 1.) It is remarkable that although in his *Fragments d'un Mémoire sur les Gäels*, M. Edwards refers to this important passage, he takes no notice of that part of it here quoted, which is so opposed to his chief conclusion.

‡ See the writer's sketch of the philological part of this question in his *Historical Ethnology of Britain* (*Cran. Brit.*, chap. v, pp. 135-139). The celebrated passage with which Cæsar commences his *Commentaries*, "De Bello Gallico," should always be read in connexion with the more discriminating one with which Strabo opens his description of Gaul; and in which he says he describes, as is the duty of the geographer, the physical divisions of countries and diversities of nations, rather than their political limits.

the living representatives. This view of Retzius appears to be that, until very recently, generally held by the modern school of French anthropologists, as represented by such able inquirers as MM. Broca and Pruner-Bey. It is confidently maintained by M. Broca that both the Celts and Kimris of Gaul were dolichocephalic, and that Gaul had a pre-Celtic population, which was brachycephalous. M. Broca refers the brachycephalic type, which, as he observes, is still so prevalent in France, to a pre-Celtic race of the stone period; and with many other anthropologists believes that Denmark, Britain, and Switzerland were, in the stone age, likewise inhabited by *brachycephali*, who, long before the historical period were, like those of France, overrun and subjugated by successive waves of dolichocephalic races, the ancestors of the various Indo-European peoples.*

The learned anthropologist, Von Baer, holds similar views; and derives the brachycephalism of modern Europe, wherever he finds it, from a primitive brachycephalic population, anterior in time to the immigration of the Indo-Europeans, and consequently, both in France and Britain, from a pre-Celtic people.†

It will be seen that whatever discrepancies there are in these different systems, whether those of Edwards, Belloguet or Retzius, they still agree in making the ancient brachycephalic skulls the older, and the dolichocephalic ones the more recent of the two. It may appear rash to controvert an opinion so

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* *Anthropological Review of London*, vol. i, 1863, pp. 292-294. M. Broca admits, however, the pre-historic existence, "perhaps the anteriority," in the west of Europe, of the dolichocephalic type. Notwithstanding this admission seems principally to refer to skulls from caverns, the writer ventures to think that (combined with M. Broca's own remarkable demonstration of the dolichocephalic character of a large series of Basque skulls) it is with difficulty reconciled with the decided opinion of the same distinguished inquirer as to the brachycephalic character of the pre-Celtic stone-using people, and the dolichocephalic character of the bronze-using Celts. I find, by a letter from M. Broca, that his opinions on this subject have gradually undergone considerable modification, and that they have ceased to be identical with those quoted from him in the text above. The views of Retzius are still energetically defended by M. Pruner-Bey.

† See the memoir by Professor v. Baer, *Ueber einen Schädel aus Mecklenburg*, "Bull. de l'Acad. Imp. de St. Petersbourg," 1863, tome iv, p. 335. In this memoir, the author says that whilst there is ample proof of a very ancient brachycephalic race in Europe, there is as yet no sufficient evidence of a dolichocephalic people anterior to the advent of the Indo-Europeans. He admits, however, that such proof may yet be forthcoming:—"Mehr nachweise von einem Europäischen urvolke mit langgezogenen und zugleich grossen schädeln" (p. 343). I venture to think that strong evidence in this direction is afforded in the present memoir.

ably supported by the leading anthropologists of the day; but the views I have been led to adopt have been forced upon me after long inquiry, and after many years of original investigation of the cranial forms from the most ancient tumuli of this country.* These opinions, moreover, are not altogether peculiar to myself. The priority of the dolichocephalic skulls from the chambered and other long-barrows of Britain, was maintained by the late Mr. Bateman; who made so large a collection of the most ancient crania, associated implements and other remains, from the barrows excavated by himself and friends, in Derbyshire, Staffordshire and Yorkshire. Mr. Bateman assigned the chambered barrows to "the most remote antiquity, when the sole material for the spear and arrow was flint." After exploring several such mounds (much less remarkable, however, in the size of their chambers than those of the Dobunian district), he says, "the interments within the chambers have been many, and apparently continued over some length of time. They are marked by a strongly-defined type of skull, the more obvious feature being excessive elongation and a laterally compressed appearance, enhanced sometimes by the sagittal suture being elevated into a ridge." To a later period, he assigned the smaller barrows covering one or two skeletons, accompanied sometimes by objects of bronze in addition to those of flint, the crania from which, he says, are of a short, round form.† In these conclusions Mr. Bateman to a great extent adopted those of Professor Dr. D. Wilson, whose opinions, as matured by further inquiry, have very lately been published. Dr. Wilson holds that the earliest population of Britain was an allophyllian and pre-Celtic one, with a peculiarly dolichocephalic cranial conformation, tapering equally towards the forehead and occiput, to which he gives the name of *kumbecephalic*, or boat-shaped. Ignorant of metals, these people,

* It is right to mention that Dr. J. Barnard Davis, joint author with myself of the *Crania Britannica*, does not admit the priority in date of the dolichocephalic skulls from the long barrows, or the pre-Celtic doctrine in any of its forms. He maintains "the protogenic character of the Celts," and regards the long and short skulls from the tumuli as equally Celtic. His views on this subject differ alike from those here maintained, and from those generally held by continental anthropologists (*Cran. Brit.*, pl. 33, chap. II, p. 20, and *passim*).

† *Ten Years Diggings*, 1861, p. 146; *Journal Brit. Arch. Assoc.*, 1852, vol. vii. p. 210.

rude workers in stone, raised those remarkable megalithic tombs, in the crypts and galleries of which the bony remains of their noble or royal dead are found. Upon these, he maintains, a race intruded, having skulls of marked brachycephalic proportions, with prominent parietal tubers, and truncated and often flattened occiput; in whose smaller earthen tumuli and cists, the first traces of bronze implements and weapons are met with. This, he believes, was also an allophyllian, perhaps, a Turanian people, to whom a third race, the true Celts, who, as he holds, were dolichocephalous, succeeded.* To this last proposition I am unable to give my assent, finding, as we do, that the brachycephalous form of skull, described by Dr. Wilson as that of his second race, is the form usual in the least ancient of the pre-Roman tumuli of the south of the island, as well as in the rest of Britain, and is therefore, doubtless, that of the Celtic (Cymric-speaking) inhabitants; in fact, that of the Britons of the times of both Julius and Claudius Cæsar.

Whether sanctioned by authority or not, the views maintained in this paper appear to rest on facts not easily otherwise explained. It is my object (whatever may become of the explanations by which they are accompanied) to submit these facts to the consideration of the anthropologists of the two countries; which—though separated by the sea and by a difference of language—were once the seat of a common Celtic nationality,† and are now happily allied in the joint pursuit of this and other scientific questions.

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* *Prehistoric Annals of Scotland*, 1851; 2nd edit., 1863, vol. i, chap. ix. Sir W. R. Wilde, who, in his *Lecture on the Ethnology of the Ancient Irish*, 1844 (comp. Wilde, *Boyne and Blackwater*, 2nd edit., 1850, pp. 40, 229), called attention to the distinction between long and short skulls, likewise maintained that the long skulls were those of the aboriginal and probably dark-haired Irish; and that the round skulls from the smaller cists were those of a second and fair-complexioned race, who became the dominant people of the country. These early views of Sir W. Wilde, having inadvertently been otherwise represented (*Cran. Brit.*, p. 16), it is important to state this, as is here done with his sanction. He informs me, that his opinions remain unchanged. Among the modern Irish, Sir W. Wilde finds the descendants of the two ancient races,—the "long-headed aborigines," dark-haired and of swarthy complexion, particularly beyond the Shannon, towards the west; and the oval or globular-headed, light-eyed and fair-haired Celtic people, to the north-west of that river.

† Under the sovereignty of the Belgic Divitiacus, about 100 B.C., *Bell. Gall.*, lib. 2, c. iii, iv.

If we compare the existing populations of England and France, and omit any reference to the combinations resulting from the mixture of types, it will, perhaps, be allowed that there are in each country two principal cranial forms, which are mostly associated with other physical characteristics. In England, the prevailing form of skull is ovoid or moderately dolichocephalic, combined with a more than medium stature, and generally with a fair skin, and light eyes and hair. A much less common form of head is the brachycephalic, usually found in connexion with a less stature, and with a dark skin, hair, and eyes. The first of these two types is Teutonic, and to be traced to an Anglo-Saxon and Scandinavian source; whilst it is almost equally certain that the second is derived from our British or Celtic ancestors. In France, two types are found, corresponding with those in England, though with their respective modifications. The dolichocephalic fair people, not so tall for the most part as those of England, and the darker people, of shorter stature and decidedly more brachycephalic than in this country, form the two prevailing types. In France, however, the brachycephalous dark people constitute the majority. England, as its language and history both show, was much more extensively Germanised than France; but, after the downfall of the Roman empire, Gaul likewise admitted a large Teutonic element; and it is reasonable to allow that the dolichocephalic type of France, as of England, is in general Teutonic, and to be attributed to a Gothic, Burgundian, Frankish, or Scandinavian origin; and not, as by Edwards and others, to a Cymric, as distinguished from a Gaelic one; or, as by Retzius and his followers, to a Celtic source (without distinction of Cymri and Gael), as distinguished from a pre-Celtic, aboriginal people, of altogether different lineage. It is not, however, denied that the descendants of a pre-Celtic race may still exist in both countries; though hitherto we have had but little to guide us in the search for them.

But though the primary distinctions of type in the existing populations of the two countries may be sufficiently explained by a predominant Celtic or Teutonic derivation, the case may be different as to distinctions revealed to us by the human remains

derived from different classes of pre-Roman tombs; and which must be assigned to a period when the Celtic race in both countries was in the main free from Teutonic admixture. In these tombs we find the remains of two distinct human types; the one brachycephalic and of taller, the other, dolichocephalic and of lower, stature. The archæological evidence is clearly in favour of the brachycephalic type being the more modern. Exact researches in the more ancient tumuli of France have not, as it appears, yet been made on a large scale; but in England, in the conoid and bell-shaped barrows, in which implements and weapons of both stone and bronze* are found, (the one or the other predominating, or even excluding the other, according to the wealth or rank of the person interred, rather than to the relative antiquity of the tomb), the skulls are usually brachycephalic, or inclined to that type, and the stature is often above the average. In the much less numerous class of long barrows, often provided with sepulchral chambers at one end (and which have only recently attracted much attention, either from archæologists or anthropologists), there are no bronze or other metallic objects, but only those of flint or some kind of stone; the skulls are dolichocephalic, and the stature below the average. There are rare exceptions to this rule, but these are clearly to be referred to some casual admixture, or to the earlier tombs having been used by the later race; whilst, as regards the later barrows, it is evident that, unless the earlier race had been suddenly exterminated by the succeeding one, a mixture of interments and a mixture of the two types were to have been expected.

There are, then, two distinct cranial types from the barrows; one at least of which must be Celtic. To assume that both are Celtic, can scarcely be reconciled with the idea of

* It is a curious fact, that though the Britons certainly used iron for some purposes before the time of Julius, very few traces of this metal have been found in the tumuli of a pre-Roman date. The exceptions are so rare that the general argument is scarcely affected by them. The iron tire of chariot-wheels has been met with in barrows; but it is believed no sword, and hardly a single knife or other implement or weapon of this metal. Any exceptions in this respect seem to apply to the north of the island, where, during the imperial sway, the Roman influence, as to funeral customs, did not extend.

permanence of type (if such be admitted), or with that of ethnic unity. The Cymric and Gaelic forms of the Celtic language are equally believed to be Indo-European; and, according to the opinion generally received by such distinguished anthopologists as Retzius and Von Baer, the Indo-European cranial type is dolichocephalic, and the pre-Celtic, allophyllian type, brachycephalic. The evidence from the barrows, however, is at variance with this view. The brachycephalic and subbrachycephalic skulls from the round barrows must be regarded as those of the bronze-using Celts; and the dolichocephalic skulls from the chambered long-barrows, as those of a pre-Celtic stone-using people. Such seems to have been the order of succession of these two races in Britain; and such, it is believed, was also the order of their succession in Gaul. As I write, I have been informed by M. Broca, that at Chamant, near Senlis (Oise), a long barrow has lately been examined, in which were a very large number of skeletons. Three skulls have been preserved, which are "very dolichocephalic." There were no objects of metal, but axes, arrow heads and knives of flint, and a bodkin of bone. Nor is this the only example. About the year 1835, at Noyelle-sur-Mer, in Picardy, in a tumulus, the form of which unfortunately is not stated, there were found a great number of human skulls, separated from the trunk, and arranged in a sort of pile. All the skulls exhumed had, we are told, a singular conformation, being very long in the antero-posterior diameter, and very narrow in the transverse; so that the general form was much more elongated than in any French people at the present day.*

In Denmark, are certain megalithic barrows, in many respects like those of England, which are called Giants' Chambers; some of which have been opened, and found to contain skeletons and implements of stone. The skulls are generally of a

* *Mém. de la Soc. d'Emulation d'Abbeville*, 1838-40, p. 275. Of the skulls, four are preserved in the museum at the Jardin des Plantes (Nos. 209, 314, 315, 317; comp. Belloguet, p. 173). The reporter on this tumulus observes:— "L'étude de ces monumens, dans notre pays, est fort peu avancée: . . . il paraît d'une haute importance d'ouvrir d'autres tombelles, et de noter soigneusement toutes les circonstances de ces ouvertures."

short, round form; and the most ancient people of this part of Europe, to whom these tombs are ascribed, are probably correctly regarded as of brachycephalous type. There is, however, no reason why the order of succession of dolichocephalic and brachycephalic races should have been the same in two parts of Europe so far apart as Scandinavia and Britain; and the type of the primeval brachycephalous race of the north is possibly to be connected with that of the existing brachycephalic Lapps. By a favourite hypothesis of various German and northern philologists and antiquaries, a so-called Turanian race is supposed to have constituted the earliest population of Europe, prior to the extension of Indo-European peoples in the west; and the Basques, whose language still defies classification, and is certainly not Indo-European, have been conjectured to form, with the Lapps, a second remnant of such aboriginal people.* The Basques have long been regarded as brachycephalous; but this was on the authority of Retzius, who had no other grounds for the opinion, than those afforded by two skulls, reputed to be Basque, presented to the Museum at Stockholm, which are of this type.† So long as the modern Basques were supposed to be brachycephalous, the hypothesis of a pre-Celtic race of that type, spread over the west and north, or even the whole of Europe, was consistent in

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* Dr. J. Barnard Davis has measured a considerable series of these skulls in the museums at Copenhagen, which were obtained from the Giant's Chamber at Borreby, and from other Scandinavian megalithic tombs (*Cran. Brit.*, chap. viii). They have also been described and figured by Mr. Busk (Lyell, *Antiquity of Man*, 1st edit., p. 86, and elsewhere). It must be admitted that these skulls have a great resemblance to those of the ancient Gauls and Britons of the brachycephalic series; and it deserves inquiry whether they do not really belong to a northern branch of the same people. Measurements of them are given in one of the Tables appended to this Memoir.

† Dr. Barnard Davis, who has examined these two skulls, informs me that they are marked—the one (A.), "J. D. Tellander, 1858"; and the other (B.), "E. Museo Anatom. Clamart, Parisiis, 1859," (an apocryphal specimen;—they never had a Basque skull at Clamart). The authenticity of both these skulls appears to be doubtful, notwithstanding what is said in *Bulletins de la Société d'Anthropologie*, t. iii, p. 483; and Müller, *Archiv.*, 1858, p. 3. Both, especially the former, present an extensive parieto-occipital flatness. The measurements are as follows:—

	LENGTH. Inches.	BREADTH. Inches.	B. : L.
A.	... 6·8	6.2 t.	·91
B.	... 6·9	6·1 p.	·88

itself; though not easily reconciled with the fact of the skulls from the earliest tombs of England, and perhaps of France, being of dolichocephalous form. The Basques, however, so far as a large series of skulls from a village cemetery in Guipuscoa shows, are now found to be a long-headed people. As M. Broca informs us: "Only two or three of these sixty skulls are brachycephalous, and most of them are altogether dolichocephalous." This has a most important bearing on the question, whether one of the oldest, perhaps the oldest, population of the British islands and Gaul, may not have had a southern, and perhaps Iberian origin. For a probable solution of this problem, a comparison of the skulls from the long barrows with those of the Basques is essential, and to this I propose to return.

It is unnecessary here to describe the chambered barrows of the south-west of England; this being amply done in the *Crania Britannica*, in which the curious megalithic architecture of crypts and cists, in the tumuli of Uley, Littleton-Drew, West-Kennet, and Rodmarton is fully illustrated. These are all situated in North Wiltshire and Gloucestershire; in which last county this form of tumulus is of very frequent occurrence, and perhaps more common than in all the rest of England.* This may arise from two causes: first, the Cotteswold Hills abound in stone suitable for the construction of such chambers; and, secondly, it is not impossible that this bleak district may have been longer occupied by a pre-Celtic people than other parts of the island. Examples, however, exist in the adjoining counties of Berkshire (the celebrated "Weland's Smithy") and Somerset, where, at Stoney-Littleton, is the most remarkable of the whole, with its entrance, central avenue, and six side chambers, arranged in the form of

* A megalithic tumulus at Nympsfield, near Uley, was opened in 1862, and I have described the crania, which have been kindly contributed to my collection, and are of the usual dolichocephalic type (*Cotteswold Club Papers*, 1863). Two other chambered long-barrows, also in Gloucestershire, were opened in 1863; the one near Woodchester, the other near Charlton Abbots. The former had been previously rifled. The skulls from the cist in the Charlton Abbots tumulus were dolichocephalic; others, from a different part of the mound, brachycephalic. As the exploration has not been completed, any explanation of this apparent discrepancy would be premature. The last-named interments, however, were probably secondary.

a triple cross. Examples are found in both North and South Wales, but (like the circular chambered barrows of Ireland —New Grange and Dowth,—and of the north of Scotland), they have characters peculiar to themselves. Further north, in Staffordshire and Derbyshire, chambered barrows of less elaborate structure are met with, as described by Mr. Bateman; whilst in Yorkshire, I have noticed several large long barrows; though whether any of them contain chambers, in the absence of more than two or three excavations, is not known. A long barrow at Heslerton on the Wolds, E. R. Yorkshire, excavated in 1851, disclosed a heap of fifteen skeletons, with a leaf-shaped arrow head of flint. The skulls are remarkable for their elongated narrow form.* In levelling another long barrow at Dinnington, near Rotherham, in the West Riding, in 1862, a large number of skeletons were uncovered of all ages and both sexes, but without any regular arrangement, and with no implements or other objects. The skulls have lately been added to the museum at Oxford. They are decidedly dolichocephalic, with the occiput full and prominent; in some of them, the form is quite narrow and elongate. They fully bear out and confirm the general rule: the three most perfect have the breadth of ·70, ·72 and ·73 to the length; the mean of fifteen skulls is ·72. At the moment of my writing, another long barrow in the North Riding of this county, called Scamridge-Howe (near Scarborough), has been opened by the Rev. W. Greenwell. The tumulus is 165 feet in length, 45 in breadth, and about eight feet high. At the east end, on the natural level, were the confused remains of about fifteen skeletons, very much decayed and broken, but with no flint or other implements or pottery. I am informed there is some little variety in the form of the skulls, but that the most perfect is of decidedly dolichocephalic type. Elongated and egg-shaped tumuli are met with in Scotland, and are probably to be found in all

* Bateman, *Ten Years Diggings*, pp. 230, 276. The same type of arrowhead has been found in other long barrows; by Mr. Bateman, in Ringham Lowe, and Long Lowe (*ib.*, pp. 95, 145, 146); by Mr. Lysons, at Rodmarton; and by myself, in the rifled long-barrow on Alton Down, Wilts; but no example of the more artificial barbed arrowhead of flint has yet been met with in these sepulchres.

parts of the Island. It is to be hoped that whenever they are explored, it will be by those who are interested in anthropological investigations.

In France, there are numerous chambered tumuli, especially in Brittany; though there are many in central France, and in the vicinity of Paris itself. As yet, there is less evidence of their being found in the south of that country. As, however, they are met with in Spain—witness the very large one at Antequera—there can be little doubt of their existence in the southern provinces of France likewise. Though they have distinguishing features, these Gaulish sepulchral chambers have much in common with those of Britain. Like them, the majority are directed from east to west, with an entrance to the east.* They consist usually of a quadrangular chamber, into which opens a narrow gallery, or "*allée couverte.*" In no instance, so far as I know, are there sets of chambers opening on each side of a central gallery, as in several of the English tumuli. They are usually covered by oval mounds of earth; but I am not aware whether, as in the south-west of England, the megalithic structures are confined to one end of the tumulus, or are situated in the centre. In these chambers, in France as in England, entire human skeletons are found, often in great numbers; and with these are axes and other implements of stone, but none of bronze or other metal.† As already shown, the skulls from the long barrow at Chamant, near Senlis (Oise), are reported as "very dolichocephalous;" and another instance of the discovery of ancient Gaulish skulls of elongate type, is afforded by the tumulus of Noyelle-sur-Mer. There appears evidence, therefore, of the existence in Gaul of a dolichocephalic race during the stone age.‡

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* Carro, *Voyage chez les Celtes*, 1857, p. 184; "Plans des Dolmens."

† The sepulchral chambers of the Channel Islands, Guernsey and Jersey, have, as might have been expected, a greater resemblance to those of France than of England.

‡ Since the above pages were printed, M. Broca has informed me, that two of three skulls from Chamant have, on being restored, proved to be less dolichocephalic than he had expected. The breadth of the three, respectively, is as ·78, ·71, and ·78 to the length. Two are thus regarded by him as being mesaticephalic, and one only as very dolichocephalic. It is evident that a

At Fontenay, near Caen, a remarkable chambered tumulus was excavated in 1829,* which corresponds with one type of those in our south-western counties. It contained ten circular domical chambers, arranged in pairs opposite to each other, and formed of horizontal dry-walling. They had a diameter and height of from ten to fifteen feet. Opening into each was a low gallery three or four feet wide, and roofed with large blocks of stone; such as no doubt originally completed the roof of each chamber, as in the celebrated one of New Grange. The galleries of approach opened on the exterior of the tumulus by low doorways; the general arrangement being the same as in the chambered barrow at Rodmarton. In the chambers were human skeletons of short stature; and scattered among these many human bones very imperfectly burnt, some being reduced to charcoal, and others scarcely coloured by fire. Bones in a similar condition have been found in the Gloucestershire chambered barrows of Nympsfield and Rodmarton; and in all three suggest some barbarous funeral rite—probably human sacrifices by fire and anthropophagism—rather than burial by cremation. There was no trace of any metal; and the only associated relics were a small stone axe-head and two small vases of black pottery. One woman's skull was preserved, casts from which are in different collections. M. Deshayes observes particularly the prolongation of the occiput, giving an occipito-frontal diameter nearly an inch longer than usual in skulls of the same size. The vertical view of the skull has a very dolichocephalic aspect; but the measurements yielded by the cast give results, as the table will show, somewhat at variance with such a conclusion. This arises from the disproportionate development of the parietal eminences. When the measure is taken at the usual point of the greatest breadth, near the temporal borders of the parietals, the proportion of breadth to length is reduced from ·77 to ·74. Had more skulls been obtained,

greater number of carefully observed facts are required, before more than a tentative comparison can be properly made between the skulls from the dolmens and chambered barrows of France and those of England. For the description of the Chamant chambered tumulus and skulls, see *Bulletins de la Société d'Anthropologie*, t. iv, pp. 513, 652; t. v, p. 3.

* *Mém. de la Soc. des Antiq. de Normandie*, p. 275, 1831-33. The skull is now at the Museum at the Jardin des Plantes; No. 2998.

more decided proofs of dolichocephalism would probably not have been wanting.

But the chambered tumuli of France are not, as seems to be the case with those of England, exclusively, if even generally, the tombs of a dolichocephalic people. On the contrary, skulls extremely brachycephalous in form have been obtained from several of them. The most famous is the large one at Meudon, near Versailles, in which were as many as two hundred skeletons, which was excavated in 1845, and carefully described by M. Eugène Robert.* M. Robert observes, that of the large number of about twenty skulls, which seem to have been obtained from this chamber, some were of a "round" and others of an "oval" form; so that he conjectured they might be the remains of two distinct races. M. Serres, who reported more particularly on them, named the round skulls as of the *type Gall*, and the oval ones as of the *type Kimry*; designations which he adopted from M. W. F. Edwards. In support of this opinion, M. Serres informs us that these two forms of skull occupied two different levels in the chamber, those of the *type Gall* being generally the deepest. This statement, however, is accompanied by qualifications which deprive it of much value;† and even were this not so, the inference which is implied, that the skeletons with an oval form of skull had been interred at a later period than those in which the cranium is of a short round form, can scarcely be admitted. These large sepulchral chambers seem always to have been entered by the opening at one end, when interments were to be made in them; as the covering stones are too heavy to have been easily removed when once in place. It is even possible that the brachycephalic skulls, which were of great thick-

* *Comptes Rendus de l'Acad. des Sciences*, tome xxi, 1845: "Voyages en Scandinavie," etc., 1854, pp. 199-248. With the skeletons were several axe-, javelin-, and arrow-heads, knives and other implements, all of flint; various implements of bone and horn; part of a necklace formed of the canine teeth of a badger, and many fragments of coarse, black and reddish, hand-made pottery. It is clear that the dolmen belonged to the "stone-period"; and the little bit of broken bronze, the position of which is not noted, was probably of no more significance than the fragments of Roman tile and pottery, which had, no doubt, found their way into the chamber between the covering stones.

† "Cette remarque est générale, car on n'a apporté aucun ordre dans l'enlèvement des ossements." P. 223.

ness, and very different in this respect from the oval ones, would, from their greater weight, sooner drop from the bodies,

Fig. 1. *Male Skull from the Meudon dolmen.—Quarter diameter.*

which were deposited in a crouching posture face to face along the sides of the chamber. If this were the case, they would naturally occupy a lower level, and would also acquire that

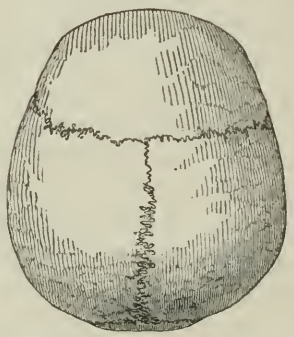

Fig. 2. *Vertical view of the same skull.—Quarter diameter.*

slate-grey colour by which they were distinguished from the yellowish coloured oval skulls.

Altogether, the proof of a succession of races, distinguished by a difference in the cranial type, the oval being subsequent in time to the round, cannot be regarded as substantiated by

the researches in this tomb. The existence of considerable variety in the form of the Meudon skulls must be admitted;

Fig. 3. *Female skull, from the Meudon dolmen.—Quarter diameter.*

but whether they are those of two races is a question which would require for its decision a careful examination of the entire series, now, perhaps, scarcely accessible. It

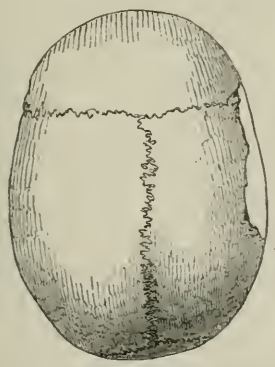

Fig. 4. *Vertical view of the same skull.—Quarter diameter.*

is very possible that the difference of form is no greater than is frequently met with in the brachycephalic series; which, in various races, often deviates towards the oval form, without becoming inordinately dolichocephalic. This is to some

extent confirmed by an examination of M. Robert's casts of two of the skulls, regarded as typical; for the use of which I am indebted to Dr. J. Barnard Davis. That of the male skull, named *type Gall* (*Figs.* 1, 2), is of the same brachycephalic form as our British skulls from barrows of the bronze period; the breadth being as ·85 to the length. The superciliaries are prominent, and the alveolar portion of the upper jaw is strongly developed, tending towards prognathism. The forehead and vertex are high; the occiput and adjoining parts of the parietals, as hereafter referred to, flattened. The cast of the skull, named *type Kimry*, is that of a woman (*Figs.* 3, 4). The race-characters are rarely well marked in the female; and, as shown in Professor Wagner's plates of the brain, and equally to be inferred from Professor Welcker's comparative measurements of male and female German skulls, this organ has a longer and more tapering form in women, whose skulls, even in brachycephalic races, incline towards dolichocephalism. This skull, however, strictly speaking, is oval rather than dolichocephalic; the proportion of breadth to length being ·75; or exactly the mean of the oval or orthocephalic class, as distinguished from the dolichocephalic, in which the proportion may be said not much to exceed ·70, and from the brachycephalic, in which it is ·80 and upwards.* There is some post-coronal depression. The upper jaw projects somewhat more than that of the male, but has not the Negro-like prognathism, which M. Belloguet attributes to it. The occiput is full and prominent, and has no trace of the vertical flatness observed in the male. The two last features are both feminine characteristics.† Even if the Meudon skulls be those of two different races, as it may be admitted is possible, they must, at least, have been contemporary; though, in such case, it is possible that one of them may

* See the explanation of the Tables appended to this Memoir.

† The description by M. Broca (*Bull. de la Soc. d'Anthrop.*, t. iii, 1862, p. 320), is that of casts of the same skulls from Meudon; though his measurements of the breadth of the female skull falls short of my own (when allowance is made for the defective state of the right parietal) by seven *millimètres*, or about three-tenths of an English inch. M. Broca, at that time, regarded the dolichocephalic skull as Celtic, the brachycephalic one as pre-Celtic. He observes, particularly on the large size of the latter, with a capacity, as gauged by him, of 1540 cubic *centimètres*, or 94 cubic inches English.

have been dominant and the other servile. The latter, who in such case must have been pre-Celtic, may have supplied wives to the former.

The proof of the existence in ancient Gaul of a brachycephalic race, who interred their distinguished dead in chambered tumuli, does not rest on a single example. The skull from a chamber of this description at Marly-le-Roi, not far from Meudon, which was sent by M. Robert to Stockholm, is of round form;* and Professor Retzius describes it as remarkably similar to the brachycephalic skull from the chambered barrow at Stege, in the Danish isle of Moen; of which Professor Eschricht gives a good representation.† Another "sepulchral gallery" at Val (l'Isle-Adam, Oise), in the country of the Silvanectes, to the east of Paris, having an entrance to the south, has been particularly described by M. Serres.‡ With the skeletons, there was nothing found but two small stone axes, and two vases of sun-dried pottery. Whilst M. Serres alludes to a considerable variety of type in the crania from this chamber, he, at the same time, remarks on the great perfection of the "*type Gall*," or brachycephalism, of certain of them. The curious entire skeleton, with the label *Silvanecte* (No. 1634), which, with several of the skulls, is in the museum at the Jardin des Plantes, is from this tomb. It has an oval or orthocephalic cranium, and is that of a woman.

The evidence before us appears to favour the conclusion, that whilst in Britain the chambered long barrows were erected by a dolichocephalous race, in Gaul such tombs were raised by a brachycephalous as well as by a dolichocephalous one, though especially by the former. Hence the inference, that the two races came into contact in Gaul at an earlier period than in Britain. In this country, it has been shown that the evidence is in favour of the dolichocephalous race having preceded the brachycephalous; by whom it seems to have been

* Robert, *Op. cit.*, p. 227; Müller, *Archiv.*, 1847, p. 500.

† Dansk Folkeblad, 1837, No. 28, p. 109. The figures and measurements of the two skulls are very similar; but that from Moen is of a man, that from Marly, most probably, of a woman.

‡ *Comptes Rendus de l'Acad. des Sciences*, tome xxxix, 1854.

absorbed, or, as is less likely, extirpated. In Britain, the remains of the brachycephalous Celtic race do not distinctly appear except in the circular tumuli, which are generally to be referred to the age of bronze; whilst the chambered and other long barrows of the stone age, so far as yet examined, always contain skeletons with crania of a dolichocephalic type.—It seems desirable to adduce further evidence of this position.

In South Wiltshire, scattered among the much more numerous circular tumuli, are many gigantic long barrows without chambers; stones for the formation of which were not easily to be obtained. Many of these were examined by Sir Richard Hoare and Mr. Cunnington; and found to cover interments of entire skeletons, generally at the east end, and without ornaments, pottery or weapons of bronze or other metal.* Unfortunately, none of the skulls were preserved; and it was impossible to say what was their type, whether dolichocephalic, like those from the chambers of the Dobuni, or brachycephalic, like those from the surrounding conoid and bell-shaped barrows.

After many unsuccessful attempts to find a long barrow having the original interment intact, in the spring of 1863 I was rewarded with success. About a mile and a half to the west of Stonehenge, on the boundary of the parishes of Winterbourn-Stoke and Wilsford, is a cluster of circular barrows, which, as in many other instances, are grouped around an immensely long tumulus; just as the hypogea and rock-tombs of Egypt are around the great pyramids.† The tumulus is about

* Mr. Cunnington informs us, that "of eleven long barrows which he had opened, nine produced skeletons at the wide end, lying by a cist or cists; . . . but no urns, arms, or trinkets of any kind" (*Archæologia*, vol. xv, 1805, pp. 340, 345; comp. vol. xxxviii, 1860, p. 405). Sir Richard Hoare concludes the frequent notices of his "unsatisfactory researches in the long barrows of South Wilts" with the remark, that "their original purport is still involved in obscurity, and a further explanation of them would be a great desideratum."

† See Hoare, *Ancient Wilts*, 1812, vol. i, pp. 121-126, and plate of "Group of Barrows on Winterbourn Stoke Down." The twenty-six tumuli which, in addition to the long barrow, form this group, are mostly of the more elegant, and probably less ancient, forms. In five, the interment has not been found; two, however, are those absurdly called "pond barrows," and probably not sepulchral. Of the twenty-one, seven have been raised over the entire body, and fourteen over the burnt remains. All are probably of the "bronze period;" and in three, containing skeletons, and one, burnt bones, there were fine blades or pins of that metal, one of the last with an ivory

240 feet in length, and 9 in height at the north-east end, where it has a breadth of about 65 feet: at the other extremity it is not quite so high or broad. The summit is thrown up almost to an acute ridge, but at the two ends the surface is more rounded. On each side is a trench stretching the whole length of the barrow, but, as usual, not continued round either end.

A large excavation at the south-west extremity, disclosed no sepulchral traces; and this immense mound, with an interment only at one end, was no doubt intended quite as much for a monument as a tomb. At the north-eastern end, about two feet below the highest part of the tumulus were six skeletons, viz., one of a man of about sixty years, one of a young woman under twenty, one of a child about seven, and three of infants of less than two years, the youngest, perhaps, fœtal. The skull of the man lay to the north-east, that of the woman to the south-west. Secondary interments of the Anglo-Saxon period have been

Fig. 5. Earthen Vase, with secondary interment.—One-third diameter.

found near the summit of long barrows; but these were obviously British, as shown by the flexed position of the skeletons,

handle. Drinking cups, or other earthen vases, were obtained from four of the barrows; and there was a bone pin with another of the deposits after cremation.

by an empty vase of very coarse British pottery, and an oval flint knife. The male skull is well preserved, and of extremely brachycephalic type; the skulls of the women and children were obtained in a fragmentary condition, but the latter present

Fig. 6. Flint Knife, with secondary interment.—Two-thirds diameter.

the same well-marked type, with the occiput flattened. These interments can hardly have been other than secondary, and of a later date than that for which the tumulus was erected; and it became a question of no slight interest whether, on the primary interment being reached, the skull would prove of the same, or of dolichocephalic type. Continuing the excavation, the chalk rubble was dug through, to a depth of six feet, into a stratum of black unctuous earth, of which the lower third of the barrow through its entire length seems to have been formed. At a further depth of three feet, the chalk rock was reached, where were the remains of the original interment; viz., the skeleton of a man laid on the right side, with the knees drawn up in a closely-contracted posture, and the head to the south-west. Close to the right arm, lay a natural bludgeon-shaped flint, about

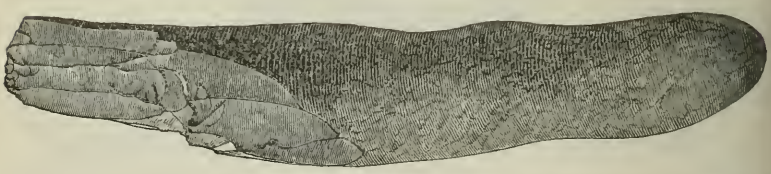

Fig. 7. Bludgeon-shaped Flint, with primary interment.—One-half diameter.

eight inches long, well adapted for being grasped in the hand; from one end of which numerous flakes had been knocked off. The skull was dolichocephalic; though less decidedly so than

many of the crania from the chambered barrows.* Near the back of the head was a round "cist" or hole, scooped out of the chalk rock, about eighteen inches wide and the same in depth. Two feet further to the north, were two similar cists of oval form, but somewhat larger, and scarcely so deep. These holes, like others beneath the long barrows of South Wilts, had perhaps been used for deposits of meat and drink, as a *viaticum* for the dead; or possibly for the blood of human victims, whose mangled remains appear often to have been buried with the body of their chief in this class of tumuli.† A few scattered bones of sheep and other animals were found near the summit; and, about a yard from the feet of the primary interment, was the symphysis of the ischium of an old horse. The skeleton was that of a man of less than middle stature; viz., about 5 feet 6 inches. The bones are small and slender, and, in this respect, are strongly contrasted with those of the brachycephalic skeleton from the upper level.‡ On the linea aspera of the right femur is a sharp jagged exostosis.

It remains to describe the two skulls, of which the measurements are given in the Tables appended to this paper. A, is the dolichocephalic skull, from the low level or base of the

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* The skull may be described as sub-dolichocephalic, or, more strictly, as orthocephalic, or oval: its other relations are, on the whole, with the elongated rather than with the abbreviated class of British crania.

† In the human sacrifices of Dahomey, a large hole in the ground is prepared, with a block of wood, upon which the necks of the victims are laid and their heads chopped off, the blood being allowed to flow into the hole. (For the rest of these barbarous African ceremonies, see the "Despatches of Commodore Wilmot, presented to the House of Commons, 1863.") Very similar were the proceedings connected with the human sacrifices of the Khonds of India. Here, also, the blood of the victims was allowed to flow into a pit or hole prepared for the purpose. (Campbell, *Wild Tribes of Khondistan*, 1863.)

‡ The femur from the brachycephalic skeleton measures barely half an inch more than that from the dolichocephalic; and the stature of about 5 feet 8 inches, for a brachycephalic ancient Briton, is exceptionally low. The difference, however, as regards the strength and size of the bones, is very marked. The circumference of the neck of the brachycephalic femur exceeds the other by six-tenths of an inch. The following are the dimensions of the principal bones of the limbs in the dolichocephalic skeleton from the lower level (skull A.).

Upper Extremities.		Lower Extremities.	
Humerus	12⅔ inches.	Femur	18 inches.
Radius	9½ „	Tibia	15¼ „
Ulna	10¼ „	Fibula	15 „

barrow ; B, the brachycephalic one, from the secondary interment near the summit. The skulls will be seen to differ in their dimensions in other respects, as well as in the relation of length and breadth. (*Plates* I *and* II.)

The dolichocephalic skull, A, is that of a man of about 25 years. There is premature synostosis of the frontal and parietals ; the coronal and sagittal sutures being almost entirely effaced. The greatest length is 7·3 inches (the glabello-inial diameter 7·1 inches) ; the greatest breadth is 5·5 inches, being in the proportion of 75 to the length taken as 100. The forehead is narrow and receding, and moderately high in the coronal region, behind which is a trace of transverse depression. The parietal tubers are somewhat full, and add materially to the breadth of this otherwise narrow skull. The posterior borders of the parietals are prolonged backwards, to join a complex chain of Wormian bones in the line of the lambdoid suture.* The superior scale of the occiput is full, rounded, and prominent ; the inion more pronounced than usual in this class of dolichocephalic skulls. The superciliaries are well marked, the orbits rather small and long ; the nasals prominent, the facial bones short and small; the malars flat and almost vertical; the alveolars short but rather projecting. The mandible is comparatively small, but angular ; the chin square, narrow, and prominent.† All the teeth are present ; they are beautifully white, with scarcely a trace of erosion on their crowns, indicating a very different diet from that which obtained in the case of the brachycephalic Briton, whose skull remains to be described, and whose food probably comprised a large proportion of ill-prepared grain. Our dolichocephalic skull is probably that of a young chief, whose diet principally consisted of milk and flesh, which Cæsar tells us in his time was still that of the Britons of the interior.‡ (*Plate* I.)

* The late Mr. Bateman often found Wormian bones in this situation, in narrow dolichocephalic skulls from the Derbyshire chambered barrows. (*Ten Years Diggings*, 1861, pp. 263, 269.)

† The great similarity of this lower jaw and that of the dolichocephalic and synostotic skull from the chambered long barrow of West-Kennet, deserves notice. (*Cran. Brit.*, plate 50.)

‡ "Interiores plerique frumenta non serunt; sed lacte et carne vivunt."

The large brachycephalic skull, B, has all the sutures extensively obliterated, by the advance of age. The greatest length is 7 inches, which is very slightly in excess of the glabello-inial diameter; the greatest breadth is 6·15 inches, being in the proportion of 87 to the length taken as 100: the brachycephalism is greater than in any skull described and engraved in *Crania Britannica*. The forehead is high, broad, and expanded. The parietal region is short, but very broad; its posterior third slopes down abruptly, to meet the projecting rugose border of the overlapping flat occipital. The parieto-occipital flatness is much more marked on the left side than on the right, and may, perhaps, indicate the use of the cradle-board in infancy. The glabella and superciliaries are tolerably full, the nasals well pronounced, the orbits large and square, the facial bones large and deep, especially in the alveolar region; the malars prominent and elevated. The mandible is large and broad, the chin broad. The left temporo-maxillary joint has been the seat of considerable disease, causing much shortening and deformity of that side of the face. The maxillary condyle and glenoid cavity of the temporal present extensive atrophy and absorption; the right ascending ramus measures 2·8, the left only 2 inches, in length. The teeth are large and covered with tartar, the crowns very much eroded; the second lower bicuspid on each side seems never to have been developed. (*Plate* II.)

The discovery of skeletons so different in their cranial type, in different parts of this tumulus, goes far to establish the anteriority of that from the lower level, the type of which corresponds on the whole with that of skulls from the chambered barrows of the Dobunian district of North Wilts and Gloucester. Fresh proof is obtained as to the brachycephalic cranial type of the Belgic Britons; and strong testimony adduced as to the dolichocephalic type of the race which preceded them in this south-west part of Britain.

The later Belgic Britons seem to have been the first agriculturists—"agros colere coeperunt." (*B. G.*, lib. v, 12, 14; comp. iv, 31, 32; *Crania Britannica*, c. v. p. 66).

Later in the year 1863, I successfully explored another of the long earthen barrows of South Wilts. This was in the parish of Tilshead, about seven miles north of that last described, and not far from the eastern extremity of the ancient vallum called Old Ditch.* It is now covered with trees of about twenty years growth, and is of smaller size than that of Winterbourn-Stoke; being about 210 feet in length, 50 in breadth, and six or seven in height. There is the usual ditch on its north and south sides. Excavating near the east end, a stratum of black earth was found at the depth of about five feet; and in and below this, a pile of human bones, closely packed, within a space of less than four feet in diameter and about a foot and a half in depth. They proved to be the remains of eight skeletons, strangely cemented together; so closely as to show, that if not interred after the decay or removal of the flesh, the bodies must have been packed together as closely as possible in the sitting or crouching posture. The lowest skeleton, covered by the others, and most centrally placed, was that of a woman; whose skull, the best preserved of the whole, is described further on. There were no relics whatever with the skeletons; nor were any cavities scooped out in the chalk at the base of the barrow disclosed; though there can be little doubt such "cists" would have been found if the excavations had been sufficiently extended.

The skeletons were those of three men, three women, and two infants, from one to two years of age. The length of the bones of the limbs was not above the medium, and implies a stature of from 5 feet 5 inches to 5 feet 8 inches, for the men; and 4 feet 9 inches to 5 feet 3 inches, for the women.† The restoration of the skulls from the many fragments in which

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* It is laid down on the Ordnance Survey, and in Sir Richard Hoare's maps of Heytesbury and Amesbury stations. It is the "fine long barrow on a hill," referred to at p. 93 of *Ancient Wilts*, vol. i.

† In the following Table the bones are arranged in the order of their length, it being impossible to assign them certainly to the skulls to which they belong. The actual order, however, is not unlikely to have been that in which the skulls are numbered.

The computed stature in this table is obtained by taking the femur as 27·5 to the stature estimated as 100; this being the proportion obtained by Dr.

they were recovered, was a work of great labour. The first thing observed was that nearly all had been most extensively cleft, apparently during life; the gashes in two of the male skulls (Nos. 2, 3) being of remarkable length and width; in the one extending from the forehead to the vertex, and in the other traversing the skull in all directions. In a female calvarium (No. 6) the clefts are nearly as extensive. In the other male skull (No. 1) the largest of the series, the clefts are confined to the two temporal regions, and are somewhat more ambiguous in their character. A similar doubt may apply to a second female skull (No. 5); but, on the whole, I conclude that all five have been purposely cleft in the completion of the funeral rites. That human victims were sacrificed at the funerals of the Gaulish chiefs, somewhat before his time, we know from Cæsar himself, and from the geographer Mela. Among barbarous and partially-civilised peoples, such immolations have everywhere been common; and the mode by which they were carried out by those who raised the chambered and other long barrows of this country is evident, from the examples which, up to this time, have been adduced. The heads of the victims were no doubt cleft with an axe or sword. Out of six long barrows, four of them megalithic, which have been explored by myself or friends, and which I have particularly described,

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Humphry, from the measurement of twenty-five skeletons (*Human Skeleton*, 1858, pp. 106-108, Tables 1 and 4). This estimate gives a somewhat less stature than that obtained by the more artificial methods described in *Crania Britannica* (plates 42, 51, *notes*). More extended data for a table of measurements, like that by Dr. Humphry, but distinguishing the sexes, are still to be desired.

No. of the Skull.	LENGTH IN INCHES.				Computed Stature.	
	Right Femur.	Left Femur.	Tibia.	Humerus.		
Male.					ft.	in.
1	18¾	18¾	15⅓	13½	5	8
2	18¾	—	15¼	13½	5	8
3	—	18	—	—	5	5
Female.						
4	17½	17½	14½	—	5	3
5	16¼	—	14½	—	5	0
6	—	15¾	—	—	4	9

all have presented such appearances,* with the exception of that of Winterbourn-Stoke, described in this memoir. In this instance the primary interment was represented by a single unmutilated skeleton; and it is probable that the usual funereal rites were never completed. It is clear that in the exploration of tombs of this description, whether in England or France, cleft skulls should always be searched for.

To return to our Tilshead barrow. The only skull without greater or less trace of violence (No. 4), is that referred to as the deepest and most centrally placed; and I am inclined to conjecture that this sepulchral mound was raised in honour of some woman of rank or female chief; the examples of Boadicea and Cartismandua showing that in Britain, supreme power was at times exercised by women. All the skulls are of the elongate form, with the occiput full and prominent; the mean breadth being about as 71 to the length taken as 100; the largest male skull has a breadth of ·68. There is post-coronal depression in most, and to a marked extent in one of the female skulls (No. 6). Very decided traces of it are observed in the centrally-situated female skull. This cranium, the only one with the facial bones and lower jaw, is a remarkable specimen, being not only very elongate, but having an extremely-depressed and flattened vertex; the greatest height being only as ·65 to the length.† (*Plate* III.) The only skulls to which I can compare it, are those of three Parisian women and especially that depicted by Dr. Foville, the height of which

* The six tumuli are those of Uley, Littleton-Drew, West-Kennet, Rodmarton (all described in *Crania Britannica*), Winterbourn-Stoke, and Tilshead. The only example previously on record was in a long barrow near Heytesbury (a few miles from Tilshead), in which Mr. Cunnington, in the year 1801, found numerous skeletons crowded together at the east end, and observed that the skull of one "appeared to have been cut in two by a sword" (Hoare, *Ancient Wilts*, vol. i, p. 87. No inference was drawn from this). Cleft skulls, in one or two instances, have been found in other British graves; and this mode of immolation may have been practised down to a later age than that of the long barrows. The cleft skulls from the cists at Monkton, North Wilts, are of dolichocephalic type, and much resemble the skulls from the long barrows. The district is Dobunian (*Cran. Brit.* pl. 58). One of the cleft skulls from Rodmarton is figured in *Cran. Brit.* (pl. 59, p. 4).

† In the numerous cranial measurements given by Professor Welcker (*Wachsthum und Bau des Menschlichen Schädels*, 1862), I observe only three instances in which the relative height is so low as in this skull.

appears to be as ·63 to the length.* The skulls of the two "filles publiques," figured by Dr. Gosse,† are of a very similar form, which in all three cases is regarded as the result of an artificial, though undesigned, deformation.

Fragments only of the two children's skulls were recovered. The frontal suture of the eldest is quite open, and the two semi-frontals are very remarkable for their breadth, flatness, and slight elevation. This had produced that variety of *brachycephalism*, denominated *frontal* by Professor Welcker, from which even dolichocephalic Negroes are not, perhaps, entirely exempt.

The form of skull, from the bowl-shaped, bell-shaped, and other circular barrows of pre-Roman Britain, scarcely requires extensive illustration; being on all hands admitted to be brachycephalous. This was the decided opinion of the late Mr. Bateman; and it is even insisted on by Dr. D. Wilson, who observes: "To whatever causes the change may be traced, certain it is that in the centuries immediately preceding the Romano-British era, the occupants alike of the southern and the northern parts of the island were characterised by a head of brachycephalous proportions, and otherwise essentially different from that recovered from the megalithic tombs."‡ My friend and colleague, Dr. Barnard Davis, who dissents from the pre-Celtic doctrine, and regards the dolichocephalic skull merely as an "aberrant form," the connexion of which with "chambered barrows may be a contingency little more than accidental," still regards the brachycephalous as the "typical form of cranium of the Ancient Briton."§

Whilst the dolichocephalic skulls from the long barrows group themselves around the number 70, as regards the pro-

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* *Système Nerveux*, 1844, atlas, pl. 22. "Crâne déformé à la Française trouvé dans un cimetière de Paris."

† *Déform. du Crâne*, pl. ii, fig. 3; pl. iv, fig. 9. The deformity in these skulls, the *annular* and *bilobed*, is the same with that of which traces, represented by post-coronal depression, are seen in so many of the skulls from the long barrows of the south-west of England.

‡ *Prehistoric Annals of Scotland*, 2nd edit., vol. i, p. 268.

§ *Proceedings of Academy of Natural Sciences of Philadelphia*, 1857, p. 40, "*Crania Britannica*," *passim*.

portion of the breadth to the length taken as 100; the brachycephalic ones from the round barrows are mostly represented by the number 80 and upwards. The few exceptions to this rule to be observed in the extended Tables of Measurements in the *Crania Britannica*, are, I believe mostly to be explained by a mixture of races or of interments. It is not probable that the pre-Celtic people were everywhere and at once extirpated or absorbed by the Celtic; and hence the occasional (though still rare) presence of both cranial forms in the same tumulus; as well, perhaps, as the production of a hybrid population with a cranial form intermediate to the two others. Moreover, the two principal forms of British cranium are here described as dolichocephalous and brachycephalous in a relative sense; and it must not be forgotten that no trenchant line divides the one from the other, but that dolichocephalism, in British as in other skulls, merges in brachycephalism, through an intermediate ovoid form (*mesati-* or *ortho-cephalism*), by insensible gradations. It thus occurs that some of the skulls from the long barrows which are the least dolichocephalic may have the same proportion of breadth to length (·74, ·75, or ·76) as others from the circular barrows, which are the least brachycephalic. Nothing is to be inferred in such a case from one or even more skulls, separated from their proper series, or from those with which they were found. When, however, other characters are considered, the difficulty is removed; and it is usually possible to refer even a single oval British skull to its actual class, whether dolichocephalous and pre-Celtic, or brachycephalous and Celtic. In the skulls from the long barrows the superciliaries are usually much less marked and developed, the nasals diverge at a somewhat less abrupt angle; and, altogether, the facial characters are less rugged and savage than in the brachycephalous skulls from the round barrows, which have considerable resemblance to those of the Maori race. The facial bones are very decidedly shorter and lower; as likewise the horizontal and ascending branches of the lower jaw, which usually form a more open angle with each other; so that the length of the face, from the naso-frontal suture to the chin, is much shorter in the former than in the latter. They are

likewise almost always nearly orthognathic, with the teeth of medium size; whilst the brachycephalous skulls from the round barrows have the teeth exceptionally large, and the pro-

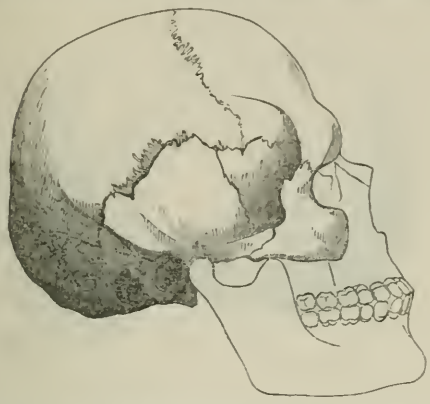

Fig. 8. *Brachycephalic skull from a Round Barrow near Stonehenge, Wilts.*

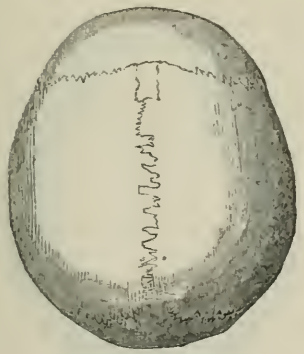

Fig. 9. *Vertical view of the same skull.—Quarter diameter.**

* (*Figs.* 8, 9.) The round barrows, which form a great necropolis around the famous *locus consecratus* of the Belgæ, at Stonehenge, were nearly all excavated by Sir R. C. Hoare, and yielded numerous weapons and other objects, of *bronze* and stone, but none of iron. I have re-opened several of them, with the object of recovering the skulls left by the previous explorer. That here figured, No. 98 of my collection, is from the tumulus, No. 150, on the large map of the Stonehenge district, given in *Ancient Wilts*, vol. i. p. 170. It is a very large and massive calvarium. In the wood-cut, maxillæ of harmonic form have been supplied in outline. Another brachycephalous skull from a round barrow at Codford, Wilts, likewise in the district of the Belgæ of Ptolemy, is given at page 156 (*fig.* 14).

minence of the anterior part of the dental arcade (especially the intermaxillary portion), is so great as to constitute a slight, or sometimes a marked, degree of prognathism. The entire maxil-

Fig. 10. *Brachycephalic skull from a Round Barrow, of the Bronze period, at Gristhorpe, Yorkshire.*

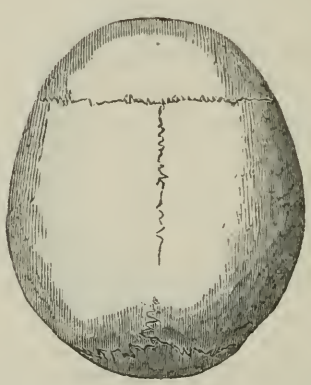

Fig. 11. *Vertical view of the same skull.—Quarter diameter.**

* (*Figs.* 10, 11.) There are many brachycephalous British skulls in collections obtained from round barrows, which may be shown to be of the bronze period; but very few, indeed, with which bronze objects have actually been found. The very perfect skull here figured, from the celebrated tumulus at Gristhorpe, Yorkshire, has therefore a peculiar interest. With it was a bronze dagger-blade, and two or three arrow-heads and flakes of flint. It has been lithographed, and fully described by myself in *Crania Britannica, plate* 52; and has been figured by Professor Retzius, and also by Professor Von Baer. It is here given as a typical instance of the brachycephalous British skull of the bronze period.

lary apparatus is so largely developed, that the term *macrognathic*, introduced by Professor Huxley, is particularly applicable to them. The superior incisive and canine alveoli

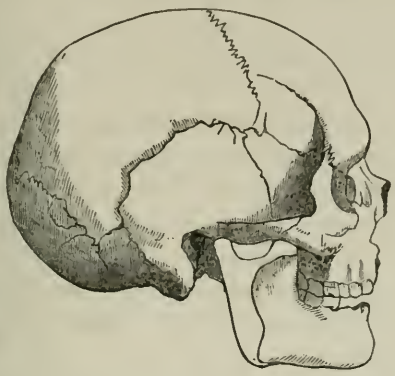

Fig. 12. *Dolichocephalic skull from chambered Long Barrow, of the Stone period, at Rodmarton, Gloucestershire.*

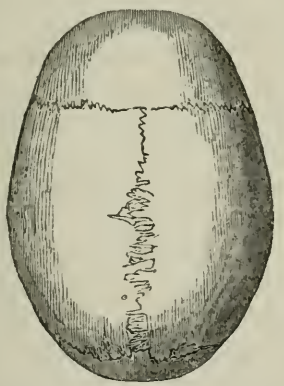

Fig. 13. *Vertical view of the same skull.—Quarter diameter.**

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* (*Figs.* 12, 13.) The skull here figured (No. 163 of my collection), from the chambered long-barrow at Rodmarton, Gloucestershire, is given as a typical instance of the dolichocephalous British skull, of the stone period. In the undisturbed chamber were no traces of metal, but two leaf-shaped arrow-heads of finely-chipped flint. The other skulls from this tumulus are fully described in *Cran. Brit.*, where one of the number, remarkably similar in form with that here figured, has been lithographed (*plate* 59).

are in the dolichocephalic class almost vertical; but in the brachycephalic class they are decidedly oblique, and the prominence of the large incisor and canine teeth is so great, as to give an almost bestial expression to the skull. Turning to the hind head, we find the supra-occipital region full and rounded in the dolichocephalic Britons, giving room for the backward development of the posterior lobes of the brain, which in this series must have materially overlapped the cerebellum; whilst in the other, the occipital tuberosity becomes the most prominent part, and the cerebellum can have been barely covered by the posterior lobes of the brain. As common in long skulls, those of the pre-Celtic Britons are more or less depressed—*platycephalic;* whilst there is a compensatory elevation in the brachycephalic series, or more or less of the form termed *acrocephalic*.*

The dolichocephalous skulls from the long barrows differ, likewise, in a very curious respect, from those of the brachycephalous series; viz., in their greater liability to premature obliteration of the sutures. This can hardly be regarded as other than a race-character, which these skulls exhibit in common with those of other dolichocephalous peoples; as Hindoos, Australians, and more particularly, Negroes. This is illustrated by the rarity, in the skulls under consideration, of the persistence of the frontal suture in the adult. Out of about ninety dolichocephalic ancient British crania, calvaria, and frontals, mostly from long barrows, I find, in addition to that of the child from the Tilshead barrow, only two instances of open frontal suture. They are both in skulls of adults, one from the chambered barrow of West Kennet, the other from that of Rodmarton. This gives about one case in thirty. In the brachycephalic skulls from circular barrows, in my collection, or of which I have drawings, the open frontal suture is much more common, or about one in fifteen;

* So termed by Dr. Barnard Davis. Platycephalism and acrocephalism can only be regarded as of secondary importance. They are evidently complementary,—the one of the brachycephalic, the other of the dolichocephalic form. The term *platycephalic* is here used, as by Virchow, in the sense of *flat-headed.*

being nearly the same as in the Romano-British and Anglo-Saxon series. We are informed by Professor Welcker that this condition occurs very frequently in Indo-European ("Caucasian") peoples, and among Germans in the proportion of at least one in ten; but that in Malays it is about one in twenty, and in Negroes and Americans it scarcely reaches one in forty.*

In the same class of skulls, the sagittal suture has, in several instances, been found more or less effaced, and in two, at least, completely obliterated; the skull in these last cases being of sub-scaphocephalic form. No such effacement has been observed in the brachycephalous skulls from the round barrows. In numerous other instances, marked *infantile obliteration* of the sutures in general is to be observed; and prematurely *senile obliteration* is also very frequent. The causes of this early obliteration, and consequent synostosis of the cranial bones, are probably the same as those producing the like results in Negroes. In the first place must be named a tendency to exuberant ossification, produced, perhaps, by a diet of a highly animalised nature. The special liability of the median longitudinal (frontal and sagittal) sutures to obliteration, is probably to be referred to the corresponding suture margins of the skull-bones coming sooner into contact than in brachycephalous skulls, in consequence of the growth of the brain being chiefly in the longitudinal, and much less energetic in the transverse and vertical, directions.†

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* Welcker, *op. cit.*, pp. 87-106, 143. In one place, Professor Welcker barely admits the possibility of the existence of the open frontal suture in the Negro, and says, he has never seen an instance (page 100). M. Pruner-Bey only observed it once in the large number of African crania which he examined (*Mém. sur les Nègres. Mém. de la Soc. d'Anthrop.*, t. i, p. 328). It perhaps occurs nearly as often as named above, or in one out of forty or fifty skulls. I found in a series of 166 Negro skulls, in the Museum of the Army Medical Department at Netley, four (Ibo, Krooman, and Ashantee), in which this suture is distinctly seen. In the same collection, out of about the same number (169), of skulls of English soldiers (natives of these islands), I counted sixteen in which this suture was persistent. The open frontal suture thus appears to be about as frequent in the English and Irish as in the more brachycephalous Germans, or in both as about one in ten. According to Leach, its occurrence in French skulls, in the catacombs of Paris, was as one in eleven (Clift. *Catal. Mus. Coll. Surg.*, part iii, p. 7).

* Since this memoir was read, I have considered more fully the subject of *Obliteration of the Sutures in one class of Ancient British Skulls*, in a paper submitted to the British Association at Bath, September, 1864.

In many cases the natural brachycephalism of the skulls from the round barrows appears to have been exaggerated by artificial means. Not only is the full and globular form of occiput, so conspicuous in the elongate dolichocephalic skulls, entirely absent, but this part exhibits a more or less vertical flatness affecting the occiput and posterior borders of the parietals. This *parieto-occipital flatness* in British skulls, so designated by Dr. Barnard Davis, was first attributed to the use of a flat and unyielding cradle by Dr. Gosse;* and by Dr. D. Wilson was compared with the like condition in the skulls of many American tribes, accurately described by Morton as "an exaggeration of the natural form, caused by the pressure of the cradle-board in use among them."† The subject has been subsequently further illustrated by Dr. Davis and Dr. D. Wilson; and the inferences arrived at are confirmed by my own

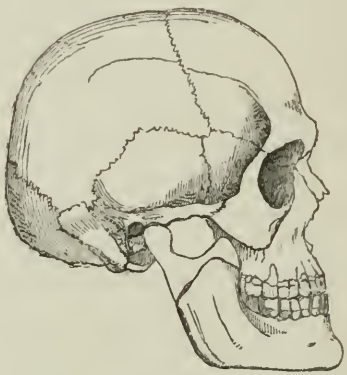

Fig. 14. *Brachycephalic skull from a Round Barrow at Codford, Wilts.*‡

* It is the *tête déprimée par derrière* of Gosse; *Déform. Artif. du Crâne*, 1855, pp. 67-75.

† Dr. D. Wilson, *Canadian Journal*, 1857, N. S., vol. ii, p. 426; Morton in Dr. Meigs's *Catalogue of Crania*, 1857, pp. 70-71.

‡ (*Fig.* 14.) This skull has been already figured by Dr. J. Barnard Davis, in his paper on *Distortions of the Crania of the Ancient Britons*. It is lithographed, of actual size, in *Cran. Brit.*, (pl. 14). It is repeated here as being derived from a circular barrow in the district of the Belgæ, about ten miles from Stonehenge, and as exhibiting very decided and almost vertical parieto-occipital flatness. The same flatness is also seen in the skull from a round barrow on the plain of Stonehenge, which is figured on page 151.

observations.* In the very brachycephalic skull of a youth of about fourteen years, from a round barrow in the Isle of Purbeck, which I have described in *Crania Britannica* (pl. 45) the form is very similar to that of the famous Scioto-mound skull of Ohio, and of many Peruvian skulls of the Inca race. In this instance, the flatness is of lozenge form, more than four inches long and three broad, and implicates the posterior half of the sagittal suture, which is partly obliterated, no doubt, as the effect of the pressure. The flattening is unsymmetrical, and much more marked on the right side than the left. "The ancient Britons," I observe, "were, to a great extent, a nomadic people, and probably enough used a solid and flat cradle, on which their infants might be secured to the back, and safely transported from place to place." This undesigned deformation has been traced in brachycephalic skulls of the ancient Britons, from barrows in all parts of the island, from the Orcades to Purbeck. As was to have been expected, it is likewise found in skulls of the ancient Gauls. It is very obvious in several in the Museum at the *Jardin des Plantes;* and especially in that from the Meudon dolmen, casts from which are known to us through the kindness and zeal of M. Robert. This skull, already referred to (p. 136, *ante*, figs. 1, 2), has been figured in his paper on this subject, by Dr. Barnard Davis; who observes that the parieto-occipital flatness in this cranium is the most marked he has in any case seen. "The flatness is very vertical, and almost parallel to that of the *vertical line* drawn through the centre of the ear and the point of juncture of the coronal suture with the sagittal." There is great variety in the direction which this flattening of the hind-head assumes. Sometimes it is decidedly oblique, at others more or less vertical; which clearly depends on the form and height of the pillow, by which the infant's head was supportad on the cradle-board. Sometimes the flattening inclines to the right,

* Dr. J. Barnard Davis on "Distortions in the Crania of Ancient Britons," *Nat. Hist. Review*, July 1862; Dr. D. Wilson, *Canadian Journal*, No. xli, Sept. 1862; No. xliii, March 1863; *Prehistoric Annals of Scotland*, 2nd edit., 1863, vol. i. My own observations are in *Crania Britannica*, Dec. 5, July, 1862, pl. 45; comp. pl. 42, 43.

sometimes to the left side;—a difference, perhaps, due to the custom of the mother as to suckling the child at the left or the right breast.

No distinct traces of parieto-occipital flatness are to be seen in the dolichocephalic skulls from the long barrows.* On the other hand, many of them present a peculiar post-coronal depression, which is absent in the brachycephalic series, and constitutes a grade of *annular deformation;*† which may have arisen from the use of a tight kerchief or ligature, with which the head of the infant was encircled and tightly bound; as is still done, with the like result, in various districts of France. The annularly-constricted dolichocephalic skulls of one race of ancient Peruvians must have been designedly deformed, by a more severe process of bandaging; but in the British tribes, from the slight degree of the distortion, the absence of design is to be inferred, as in the case of the modern French who have the same usage. It is curious that in the cemeteries of Peru, there are two distinct types of skull; the one dolichocephalic and annularly distorted, the other brachycephalic, with the occiput artificially, though not designedly, flattened; and that the former is generally assigned to the more ancient Aymaras, and the latter to the more modern Inca race. The parallel, though curious, is probably a mere coincidence.

To sum up the conclusions as to the forms of skull from the tumuli of the pre-Roman period in this country, a sort of axiom has, I think, now been established to this effect:—*Long barrows, long skulls; Round barrows, round or short skulls;—Dolichotaphic barrows, dolichocephalic crania; Brachytaphic barrows, brachycephalic crania.* This axiom is evidently not applicable,

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* The dolichocephalic people, whose remains are found in the long barrows, cannot have nursed their infants on an unyielding cradle-board. Rather, from the roundness of the occiput we might be inclined to suspect the use of a peculiar neck-pillow, similar, perhaps, to that of Africa.

† This deformation is designated *tête annulaire* and *tête bilobée*, by Dr. Gosse (*Déform. du Crâne*); according as the ligatures placed on the vertex have been carried below the jaw (*tête bilobée*), or to the nape of the neck (*tête annulaire*). Post-coronal depression is, no doubt, sometimes entirely natural. A test by which such normal depressions may be distinguished from the slighter grades of undesigned annular deformation, is much to be desired.

unless with considerable limitations, to France; but the extent of these limitations must be left to be determined by further investigations in the tumuli of that country, and to the inquiries of French anthropologists.

Though there are great individual differences in the stature of all races, and especially in that of modern Europeans; there is still no doubt that the average height constitutes an important ethnical distinction. It is scarcely necessary to refer to the difference in this respect of the Lapps and their neighbours the Norwegians, at the present day; or to that of the old Romans and the Gauls and Germans, in ancient times. The Britons who, in the reigns of Augustus and Tiberius, visited Rome, were distinguished by their height, which was greater than that of the Gauls; and Strabo tells us that some young Britons whom he saw in that city exceeded the tallest persons there by as much as half a foot.* These men were no doubt from the south-east of the island, probably from the kingdom or dependencies of Cunobeline. To arrive at anything like a correct estimate of the stature of the ancient Britons, the average should be derived from more than ten or twenty individuals. But for the comparison of the stature of the two peoples with whom we are concerned, it may be sufficient to take the thigh-bones of ten dolichocephalic male skeletons from the long barrows, and those of ten brachycephalic male skeletons from the circular barrows. Fifteen of the twenty *femora* were measured by myself; four others are in the Bateman collection. Those of dolichocephalous skeletons are from long barrows in the counties of Wilts and Gloucester; those of brachycephalous, from circular barrows in the counties of York, Derby, Stafford, and Wilts. The average length in the former series is $17\frac{3}{4}$, and in the latter 19, inches. Taking the length of the thigh-bone, according to Dr. Humphry's table, as 27·5 of the stature regarded as 100, these numbers will give 5 feet 5 inches

* Strabo, lib. iv, c. 5, § 2, 3. Strabo adds, that these men were not distinguished for their symmetry or good proportions. They were, perhaps, part of the British embassy to Augustus, also mentioned by Strabo; or of those who took refuge with that emperor, as referred to in the Ancyra inscription.

as the mean stature of the dolichocephalic men, who were buried in megalithic and other long barrows; and 5 feet 9 inches as that of the brachycephalic men interred in circular barrows. Of the latter class, two of the femora measured 19½ and two 20½ inches; dimensions which give a stature of 5 feet 11 inches, and 6 feet 2 inches, respectively. Three of the last were from Wiltshire; the other from the celebrated barrow with the tree-coffin at Gristhorpe, Yorkshire (*ante*, p. 152). Men of six feet and upwards might well surprise the people of Rome, when seen by the side of the comparatively short Italians of the time of Augustus. Of the other series, two thigh-bones measured 17 inches, giving a stature of not more than 5 feet 2 inches. Altogether, the distinction is so marked as strongly to confirm the inference of an ethnical difference in the two peoples, whose skulls are the subject of this comparison.* In France, there is evidence to the same effect. In the remarkable chambered tumulus at Fontenay, already referred to, the skeletons were those of persons of unusually short stature. The thigh-bone of greatest length measured only 15 inches 9 lines French, (equal to 16·8 inches English); which, according to the rule here adopted, gives a stature of no more than 5 feet 1 inch. This is very important; and confirms the opinion as to the identity of the people by whom the sepulchral chambers at Fontenay, and those in the south-west of England, were erected.

A few observations may be allowed on the possible or probable affinities of the two British types, revealed to us by the skulls and other osseous remains from the most ancient tumuli. It is easy to find partial resemblances in skull-forms; but not so easy to find such as can have any ethnic significance. During the last summer I had the advantage of examining the series of sixty Basque skulls, lately added to the collection of the Anthropological Society of Paris. I was at once struck with their great resemblance to the dolichocephalic skulls from the long barrows of this country; and this impression was

* The argument is not invalidated by the occasional occurrence of diminutive individuals in the one, or of tall ones in the other, people. Such exceptions are common in all nations.

much confirmed by the perusal of the two memoirs on these skulls by M. P. Broca,* so rich in details necessary for the comparison before us. On the whole, these skulls are less dolichocephalous than the British series; though M. Broca only regards two of the whole number as brachycephalic. According to the method adopted in this country and in Germany, 12 of the 60, or one-fifth of the whole, have a breadth of ·80 and upwards (·80-·83); and so would be reckoned as brachycephalous. With this exception, the skulls must be ranged in the dolichocephalic and orthocephalic classes; and they may mostly, perhaps, be reckoned as sub-dolichocephalic. The majority of those I measured had a breadth of ·71-·75.† The lengthened form of the skulls is chiefly due to the full and elongate character of the occiput; and the dolichocephalism is of the class designated *occipital* by M. Gratiolet; who by this term distinguishes the long skulls of the African and Oceanic negroes from the *frontal dolichocephalism* of the German (Scandinavian?) races. M. Broca shows, by elaborate measurements, that the form of the cranium-proper, in this modern Basque series, approaches much nearer to that of Africans, prognathic and orthognathic, than to that of Europeans, as deduced from a very large series of modern and medieval Parisian skulls. This is an observation equally applicable to our British dolichocephali. But as regards the face, the Basque skulls show no approach to the African prognathism, whether of the negro or white peoples of that continent. On the contrary, M. Broca remarks that they are actually more orthognathic than the skulls of Europeans in general. This is due to the prominence of the nasal bones and the small size of the superior maxilla; and espe-

* "Sur les Caractères des Crânes Basques," *Bull. de la Soc. d'Anthrop. de Paris*, tom. iii, 1862; tom. iv, p. 38, 1863.

† It is to be regretted that our French anthropological colleagues do not always distinguish the sex in their cranial investigations. Much confusion arises from averages founded on skulls of the two sexes taken indiscriminately; whilst the sexual characteristics are, of course, not elicited. The distinguished Dutch anthropologist, Van der Hoeven, gives an additional reason why the skulls of males should be preferred for average measures. "In tanta craniorum femineorum penuria, mensuræ mediæ rectius ad virile tantum cranium mihi referendæ videntur". (*Catalogus Craniorum Diversarum Gentium*, 1860, p. 22.) The anthropologist, moreover, is more concerned with the male skull, in which the race-characters are the most marked.

cially to the slight projection of the dental arcade, or alveolar border of that bone. Here, again, a correspondence with the British dolichocephali is to be observed; as well as in the fact

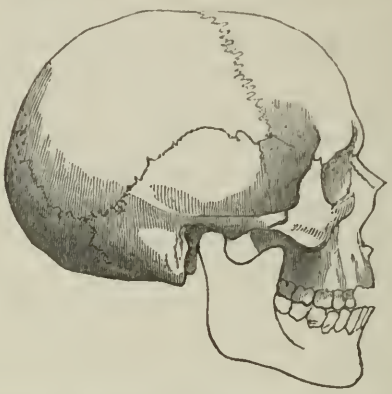

Fig. 15. *Dolichocephalic skull of a Basque, of the province of Guipuscoa.*

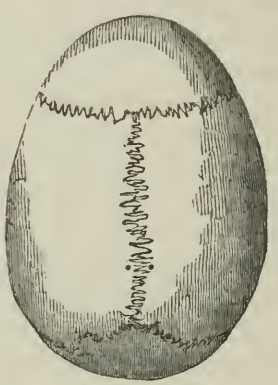

Fig. 16. *Vertical view of the same skull.—Quarter diameter.**

that though the cranial capacity is large, the occipital tuberosity or *inion* is slightly developed; which seems to indicate that nei-

* (*Figs.* 15, 16.) The wood-cuts here given have been drawn from the cast of a skull, which I owe to the kindness of M. P. Broca. It is that of No. 21, of the Basque series, in the collection of the Anthropological Society of Paris. In the former figure, the lower jaw has been supplied in outline. This, which may be regarded as harmonic, has been sketched from that of a dolichocephalous British skull, from the long-barrow at Dinnington, Yorkshire.

ther people were very tall or very muscular. From these researches, M. Broca concludes that if the origin of these Basques is to be sought beyond their own country, it is not among the Celts or other Indo-European peoples, but rather towards the northern zone of Africa that researches should be directed. It is here important to remember that, from his curious microscopic investigations into the structure of the hair, M. Pruner-Bey has shown that the Basques differ from the Aryan stock as much by their hair as by their language.

It is, however, highly probable that the present Basques are far from being a pure race; and the very opposite statements of travellers, as to their cranial form and stature,* are best explained by this admission. The examination of Basque skulls from other localities, and of other specimens of their hair, is still desirable. At present, facts are decidedly opposed to the opinion of Retzius and others, that the Basques are of Turanian origin. That they are the lineal descendants of the ancient Iberians, is now generally admitted by scholars. That the Iberians had their origin in northern Africa, or at least came from that country, is an opinion not without able advocates. It is admitted on all hands that the Libyan or Berber race extended itself, in the earliest times, to Malta, Sardinia, and other islands of the Mediterranean. It is the general opinion that the Guanches of the Canaries had a similar origin; and, as Prichard thought, the Ligures likewise.† The examina-

* See these statements in Belloguet (*Ethnog., Types Gaulois*, pp. 146, 212-235. In opposition to the prevailing dolichocephalism of the sixty skulls obtained by MM. Broca and Velasco, a series of measurements of the heads of nineteen living Basques, by the astronomer, M. d'Abbadie, is adduced by M. Pruner-Bey. Of these, twelve are said to be decidedly brachycephalic (·80-·90), and only one dolichocephalic (·71); the other six being of intermediate proportions. Just exceptions were taken to these measurements on the living head (*Bull. de la Soc. d'Anthrop.*, iv, 33, 71); whilst, it may be added, even if a large proportion of Basque skulls should prove to be brachycephalous, the question, as to how far this may have originated in a Celtic admixture, would still remain for inquiry.

† Since the above was written, the very learned and elaborate *Memoir* by Dr. G. Nicolucci, *La Stirpe Ligure in Italia* (*Atti. R. Acad. delle Scienze Fisiche e Matemat.*, vol. ii, Napoli, 1864), has reached me. In this memoir, nearly all the most recondite questions connected with European ethnology are discussed in a manner which must command great consideration. Dr. Nicolucci opposes the opinion of the Libyan and Berber origin of the ancient Ligures, and maintains the brachycephalous character of their

tion and comparison of a sufficient number of ancient and modern skulls from these countries, might enable us to decide the question of the origin of the ancient Iberians, and through them of the Basques. Two skulls from Malta,—one in the Morton collection, from the caves of Ben-Djemma, and the other in the Library at Valetta, from the ruins of the Hagiar Kim,—probably belong to the African aborigines. They are both dolichocephalic, and more or less prognathic, the last-named especially so. This prognathism, which connects these two skulls with the African type, distinguishes them from that of the Basques in the Paris collection, which, we have seen, are very orthognathic. At a very early period, the Mediterranean islands and Spain received colonies of Phœnicians, whose settlements were of great importance and extent in the peninsula, where it is known that they mixed with the native Iberians. The Phœnician skull-form, like that of the Jews and Arabs, was no doubt ovoid or dolichocephalic, and likewise orthognathic. It is, therefore, worthy of inquiry, whether the dolichocephalic and orthognathic character of the Basque skulls may not be traceable to a Phœnician source. A greater number of Phœnician skulls than at present available are required for the purposes of such an investigation; but that found at Tharros, in Sardinia, and recently described by Dr. Nicolucci and Dr. Barnard Davis, is suggestive of considerable resemblance.

In order to connect the dolichocephalic crania from the megalithic tombs of the stone period in Britain, with those of the Basques, and, through them, with the ancient Iberians, we require to know the form of the ancient Iberian skull, as revealed to us by researches in the most ancient tombs of Aquitania and Spain, and especially in the south of the Peninsula. At Antequera, in Seville, the ancient Bætica, near the immense megalithic tomb which is there open to inspection, there are two mounds, by which other sepulchral chambers are probably

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skulls (·85-·90), from three specimens, dug up near Modena and Reggio. The prevailing skull-form of the modern Ligurians and Piedmontese is shown to be brachycephalous, and believed to be the direct descendant of that of ancient Liguria. The whole memoir is strongly in favour of the Turanian hypothesis, as maintained by Retzius, Von Baer, and others.

concealed.* How much it is to be desired that these should be explored, and that any skulls thence obtained, should be carefully preserved and studied. The form of skull which prevails in the Peninsula, at the present day, also requires to be inquired into, more than it has yet been. So far as I have been able to ascertain, it is preponderatingly dolichocephalous, and is thus strongly contrasted with the more common cranial form of modern France. In the collection of Professor Van der Hoeven are five skulls of Spaniards, all of which (·75-·78) fall short of brachycephalous proportions. In that of Dr. Barnard Davis, are seven skulls of male Spaniards and Portuguese, equally ovoid or dolichocephalous (·73-·79); and the same may, I believe, be said of three Spanish skulls in the museum of the Army Medical Department at Netley. So far as these limited observations go, they are in favour of the modern Spaniards having descended from a predominating dolichocephalous people.

That the Iberian race extended itself into Gaul, at least as far as the Garonne, is on all hands admitted. The limits of its original distribution in that country form a legitimate subject for inquiry. In Britain, many circumstances point to an Iberian source for at least part of the earliest population, especially in the south-west of the island. Tacitus remarks the dark complexion and curly hair, which, in his day, were believed to indicate the Iberian origin of the Silures,† especially named, perhaps, as representative of the south-western tribes. The description of the Cassiterides preserved in Strabo is, no doubt, likewise applicable to the Damnonian peninsula, also the place of resort of the Phœnicians of Gades. This evidently very ancient notice represents the inhabitants as nomadic and pastoral, and as habited in long tunics covered

* See the *Memoir* by Sen. Mitjana; and Lady L. Tenison's *Castile and Andalusia*, p. 271, 1853.

† "Silurum colorati vultus, torti plerumque crines, et posita contra Hispania, Iberos veteres trajecisse easque sedes occupasse, fidem faciunt" (*Vit. Agric.*, c. xi). Dionysius, and his paraphraser Priscian, say expressly that the Cassiterides were peopled by the Iberians: "populus tenuit quas fortis Iberi" (Dion., *Perie.*, v, 563; Priscian., *Perieg*, v, 578). The question of an Iberian origin for an intrusive or pre-Celtic population in Britain is discussed in its historical bearings, *Cran. Brit.*," chap. v, § 2, pp. 52-58.

by black mantles—a garb apparently identical with that of the Iberians, who are likewise described as *melanchlæni*, or dark-robed,* and which is in striking contrast with the bright party-coloured dress of the Gauls. Altogether, the doctrine of an Iberian, or Ibero-Phœnician origin of a very early, perhaps the earliest, population of at least part of Britain, though not as yet proved, derives much additional weight from the comparison here instituted of the skulls of the British dolichocephali of the stone period with those of the Basques.

That the brachycephalic skull-form of the bronze-period in Britain was introduced into this island from Gaul, and was the type of the Celtic skull, at least that of the dominant race, appears to me to be proved. What may have been the origin of this "Turanian" type of skull, and how it became that of a Celtic-speaking and so-called Indo-European people; or, conversely, how the Celtic became the language of a people with such a skull-form; are important questions for the investigation of the anthropologists of Europe. In the mountainous regions of Switzerland, and especially, as shown by Von Baer, in the Rhætian Alps, this brachycephalic type, the lineal descendant of that here described as Celtic, still generally prevails. It is evident that much requires to be ascertained as to the actual distribution of this type, both in ancient and modern times; by the careful comparison of modern skulls with a sufficient number of those from the oldest tombs in all the countries of central and eastern Europe. That the short round form of skull is much more extensively distributed in Europe than has been usually believed, is obvious. By Retzius and most others, the Germans are described as dolichocephalic; but Professor Welcker, of Halle, clearly shows that even they are really brachycephalous. Out of thirty male skulls measured by him, eighteen have a breadth of ·80 and upwards (·80-·89), and twelve vary from ·74 to ·80. The mean breadth of these thirty skulls is 805 to the length

* Strabo, lib. iii, c. 5, § 11; comp. lib. iii, c. 3, § 7; Diod. Sicul., lib. v, c. 33.

taken as 1000.* The Slavonian peoples—Wends, Slovaks, Poles, and Russians—who speak languages of the Indo-European class, have very broad skulls, with a breadth of from ·80 to ·84 and ·88 to the length.† The Lapps are equally brachycephalic; but, from their short stature and allophyllian language, which imply an essential difference of race, can hardly be compared with the broad-skulled, but tall Slavonians of central and eastern Europe. On the other hand, the Scandinavians (Swedes and Norwegians) are of the most dolichocephalous of peoples. The ancient Anglo-Saxons were dolichocephalic in a less degree, or, more strictly speaking, orthocephalous. The ancient Greeks and Romans had likewise ovoid skulls, though with superadded features of their own. Whether, in accordance with the common opinion, proof is to be obtained of the immigration into Europe, from high Asia, of Indo-European peoples having a dolichocephalic type of skull, can only be satisfactorily determined by long-continued researches on the form of the skulls found in the earliest, or at least in pre-Roman, graves. Meanwhile, the idea of a connexion between the ancient Celtic brachycephalic type, and that of the modern Mongolian, or so-called Turanian peoples of Asia, cannot be overlooked; and remains for explanation, when the actual facts shall have been better ascertained than they are at present.

In conclusion, I submit the opinion that the accurate observation, description, and measurement of skulls, ancient and modern, is everywhere to be desired, before the solution of the complex problem of the origins of the different European peoples can be satisfactorily attempted. Premature attempts to reconcile the results deduced from scientific craniology, with those arrived at by philological methods, can only result in disappointment. As one element for the solution of the problem referred to, I have in this paper endeavoured to place

* Welcker, *Wachsthum und Bau des Menschlichen Schädels*, s. 45, t. 17. 1862.
† Professors von Baer and Kopernicki, *Bull. de l'Acad. Imp. des Sciences de St. Petersbourg*, 1863, tome iv, p. 358.

clearly before the reader the results obtained, after a careful and long-continued study of the two types of ancient British skulls, and, in a less degree, those of ancient Gaul.

[☞ *The Tables of Measurements and Lithographic Plates referred to in the above paper, are, with some Additional illustrative matter, reserved as an Appendix, to be printed at the end of this volume.*]

V. *Introduction to the Palæography of America: or, Observations on Ancient Picture and Figurative Writing in the New World; on the Fictitious Writing in North America; on the Quipu of the Peruvians, and Examination of Spurious Quipus.* By William Bollaert, F.A.S.L., Corresponding Member of the University of Chile; of the American Ethnological Society; of the Ethnological Society of London, etc.

I have the pleasure to bring to the notice of this society a branch of Anthropology,—which study, as a whole, we term the "Science of Mankind,"—the great divisions of which are the physical, moral, and mental characteristics. It is in connexion with the mental I have chosen to treat; namely, the doings of the Red species in their ancient modes of communicating and of handing down their ideas. I shall also make some observations on the several spurious arrangements attributed to the Red man, particularly in the United States and in Peru.

It is generally stated that there are between four to five hundred distinct languages in the New World, and over two thousand dialects. Those who have paid some attention to the subject are not prepared to admit even three-fourths to be radically different; however, if one-fifth differ from each other, such a fact is well worthy the attention particularly of philologists, as to whether a long or short period of time has been required in their formation; for language does not appear to be a gift bestowed ready made, but emanating by degrees from man himself. After the formation of language came the necessity for numerative systems; then the means for preserving the history of past events, which inquiry will form the main subject of the present communication.

The Red men of the New World had their own languages

and systems of numeration, each race in its own peculiar manner. Then, as a matter of course, they essayed to preserve the memory of past events, which they did in various and curious ways, some, however, very imperfectly. As yet, we cannot positively say that a native American alphabet has been discovered. I may state that there is the hope of soon making out an approach to something like the Chinese arrangement, through the figurative and peculiar characters in the cartouches on the Central American and Mexican monuments. Commencing in the far north, I will first advert to the

Esquimaux. Their languages are unlike those of the Red men, and approach rather to the Asiatic realm. Dr. Rae refers to their signs and the counting on the fingers, and considered they had no records. Sir E. Belcher thinks otherwise, and that the counting on the fingers at times has a deeper signification than of numerals only; and he observed they had pairs of notched sticks, similar to a baker's tally.

Canada. Kalm relates in his travels in America, that one Verandier discovered, in 1746, nine hundred leagues (!) west of Montreal, a stone tablet, fixed in a sculptured pillar, on which were marks, that were taken for a Tartarian inscription, and that it was sent to M. Maurepas, the French minister. This account may be very much doubted.

The United States of America. It has been often stated that among the Hurons, Iroquois, those of Louisiana, and other districts, they had hieroglyphical writing, not to be deciphered. This is not the case; what they had and have are rude pictorial and figurative representations scratched, generally, on sandstone rocks, and not difficult to make out. The ancient aboriginal remains are principally of mounds, or tumuli, and other earthworks; but their builders have very long since passed away, without leaving pictorial records.

I have traversed some portions of the Southern States, and carefully explored much of Texas, but found no engraved rocks; however, if we keep on the parallel, say of 33° north, from 100° to, perhaps, 115° west, we come upon an interesting region, watered in particular by the rivers Gila and Colorado, and where in some maps, *Aztec Towns, Palaces of the Monte-*

zumas, and *Casas Grandes* are marked. These are ruins of buildings generally of sun-dried brick, and I should say of no very great antiquity. It has been supposed by some that this class of ruins are the remains of buildings left by the Aztecs when they were going from the north to Mexico. This migration from the north to the south is a favourite idea of writers generally; from my investigations on this point, there is little or nothing to show that such was the case. Others think the *Casas Grandes* were built by Mexican tribes retreating from the horrors of the Spanish conquest, and that these tribes were the ancestors of the present Pimos, Maricopas, and neighbouring people, which appears to me to be the more probable. These ruins were called *Casas Grandes* on account of being constructed of many stories, and form, in the present Pueblo buildings, the abode of several Indian families. It has been stated that hieroglyphs have been found in these ruins of the *Casas Grandes;* but the general characters of the figures appear to be merely of a numerative character. There are some, however, and older-looking, markings of Mexican form.

Fröbel says, that among the hundreds of these carvings he saw, particularly along the Gila, two distinct kinds are evident: the one, representing men and animals, possess a more general meaning, by their combination with each other and with the less explicable; the second class of characters have some general meaning, and intended as a communication of ideas. Some of the boulders are engraved and re-engraved so often as to render it very difficult to get a distinct outline of many of the characters. This has been done at various periods, and by different tribes of Indians.

Möllhausen, in his late explorations near this region of the Casas Grandes, describes Rocky Dell Creek. In one of the caverns are rude Indian paintings and engravings, made in the soft stone, probably with the points of arrows: some of these owe their origin to the sportive caprice of the Indians or present Mexicans; but the majority bear a character that could only be explained by reference to the superstition of the Pueblo Indians (those who now dwell in villages). In

this region is *Inscription Rock,* with the names of Spanish visitors in olden times; also, some recent Indian carvings.

The first rather interesting specimen of Indian writing I shall refer to is the *Deighton Rock Inscriptions,* met with near Taunton, in Massachusetts. The engravings are on a mass of stone, one of its sides being covered with marks, and lines picked out. In vol. viii, p. 293, *Archæologia, Soc. of Antiq., London,* are four drawings by Mr. Lort. Numberless copies have been made of the scratchings from 1680 to 1847, and have been by some erroneously supposed to be Phœnician. The Society of Northern Antiquaries, after comparing copies, excepting that of 1847, pronounced them to be Scandinavian! In 1839, drawings were submitted to the Algonkin chief, Chingwauk, when he considered them, in part, to be the work of the New England Indians, which is, I should think, about the truth of the case. The probability is, that a portion has been picked out by Indians of a comparatively early period; fresh markings subsequently added by other Indians (not an uncommon occurrence); then some wag of a white settler has made certain modern marks, which has led to the idea that this is a Scandinavian, Phœnician, or other Old World inscription. Mr. Arnzen, of Massachusetts, sent, in 1863, to the Royal Society of Northern Antiquaries, a "warranty deed," conveying to Rafn and the said society, the rock known as the "Writing," or "Deighton Rock," and the lot and parcel of land surrounding it.

As late as 1860, an alleged fac-simile of a Hebrew inscription was presented to the American Ethnological Society, vol. i, p. 14, 1861, taken from a small, polished, wedge-shaped stone, purporting to have been found during the summer of 1860, among ancient earthworks in the vicinity of Newark, Ohio, some sixty miles from the coast of the Atlantic. The four inscriptions on the four sides contained ten words, which were interpreted as meaning "Holy of Holies," "King of Earth," "Law of Jehovah," "Word of Jehovah." The manufacture of this spurious object may be placed by the side of the said-to-be-lost (!) gold plates of Joe Smith, the founder of the Mormons, or Latter-day Saints. I may here just state

that Joe Smith was born in 1805, at Sharon, Vermont, and killed at Carthage, Illinois, in 1844. He was the vagabond son of a vagabond family. In 1823, he reported that the angel Moreni informed him where he should find the gold plates containing the holy record of how America had been peopled by descendants of Jews; the spot was a hill at Manchester, Ontario; with the record were two transparent stones, through which the writing on the golden plates would become intelligible.

In January 1861, a communication was made to the American Ethnological Society by Dr. Evans, of New Jersey; it was accompanied by a sculptured stone axe, and the information given that it was found in Rancocas Creek, in Pemberton township; that it was ploughed up on the farm of S. R. Gaskill; some of his family attempted to render the characters more distinct by increasing the original marks, but that portions of the letters, and nearly all the outer edges, had not been disturbed, which afforded evidence, as was said, of its antiquity.

Dr. Dwight observed, in a discussion that ensued, that the axe was of compact sandstone, over six inches long and four broad. The whole neighbourhood had been fruitful in Indian relics, such as axes, hammers, arrow-heads, etc. The characters were twelve in number, all different, except three, which seemed to be a repetition of the numeral, one; they were an inch in length and one-tenth in depth, and smoothly wrought. Some bore a general resemblance to characters on the *Grave Creek Stone* (a hoax),—perhaps they were Numidian (!). Some appeared identical with Phœnician (!), the mark XIII like the Roman for thirteen.

I have but little doubt that the stone axe is an aboriginal relic; but the letters and figures on it are a modern joke of some "smart" Yankee. There are three marks or lines on one side and two on the other, these are *supposed* to have been made with the plough in turning up the land. The next Yankee arrangement purports to come from the *Great Mound* at Grave Creek, and found by the side of a skeleton. The mound, when discovered, contained shell-beads, shells (*margi-*

nella), copper bracelets, slips of mica, and the relic in question (?), which is of oval form, two inches in length and one and a half in width, and of compact sandstone. The so-called inscription is arranged in parallel lines, and comprises twenty-four characters, accompanied by a supposed hieroglyph, or ideographic sign. Analyses have been undertaken by various persons, and with different and most amusing results. Mr. Schoolcraft regarded twenty-two of the characters as alphabetic, from which he identifies, as corresponding with ancient Greek, Etruscan, Runic, Gallic, Erse, Phœnician, Old British, and Celtiberic (!).

A notice of this stone appeared in the Cincinnati papers in 1839. Previously, however, a detailed account of the opening of the mound, and of its contents, was communicated to the author of the *Crania Americana*, and published in that contribution to science. This account was written by Dr. Clemens, of Wheeling, Virginia, and contains *no reference to the inscribed stone*. The stone is no longer at the mound in Grave Creek, but supposed to be in the possession of a person in Richmond, Virginia, and that the owner of the mound was imposed on. In vol. i, of *Amer. Ethno. Trans.*, there is a paper by Schoolcraft, and a drawing given of a globular stone body, four inches and five-tenths in circumference; one character on it is like the Greek delta. This is also spurious.

Another notable example of fraud is furnished by the six inscribed copper-plates, said to have been found in a mound near Kinderhook, in Illinois; these bear a close resemblance to Chinese. They proved to have been engraved by the village blacksmith, who had, probably, no better suggestion to his antiquarian labours than the lid of a Chinese tea-box. Each plate had an orthodox ideographic sign.

The last concocted palæographic affair, in connexion with the red man in the United States, is that introduced by the Abbé Domenech. In the library of the Arsenal in Paris, is a MS. which came from the collection of the Marquis de Paulmy, containing figures and letters. It is marked "Livre des Sauvages." The Abbé, under sanction of the French government, had, not long since, three hundred and twenty-

eight plates engraved, producing facsimiles, and gave his interpretation of this "Manuscrit Pictograph Américain." It appears to me to be of French or German fabrication, and foisted off upon the Marquis as a real "Livre de Sauvages." Dr. Petzhold has published a pamphlet with copies of some plates, showing it up as spurious. Some of the sketches are most indecent. The Abbé supposes this livre to be the work of the Iroquois.

Colden, in his history of the five nations, says that when, in 1696, the Count de Frontinac marched into the Iroquois country, he found on the banks of the Onondaga a tree, on the trunk of which the Indians had depicted the French Army, and deposited two bundles of cut rushes at its foot, consisting of 1434 pieces; an act symbolical of defiance on their part, which was intended to inform their Gallic invaders that they would have to encounter such a number of warriors. This warlike message is a specimen of Indian picture writing, and belongs to the lowest stage of graphic representation, which, though not yet painting words, is nevertheless a first attempt to speak to the eye.

Inscriptions found on grave-boards mark a step in advance. Every warrior has his *totem*, or crest, and it is painted on his tomb. A war-chief, the Adjetatig of Wabogeeg, died, on Lake Superior, about 1793. He was of the tribe of Addik, or reindeer, which fact was symbolized by the figure of the deer, the reversed position denoting death. His own personal name, White Feather, is not noticed; but there are seven transverse strokes on the left, meaning that he had led seven war-parties. There are three perpendicular lines below the crest, said to represent wounds received in battle. The figure of the moose's head purports to relate to a conflict with an enraged animal of this kind; and the symbols of the arrow and the pipe are drawn to indicate the chief's influence in war and peace.

But the Red man of the north went further; and though he did not or could not, in all probability, arrive at the perfection of a true hieroglyphic, he had symbolic or figurative emblems, which were perfectly understood:—

Eating was and is represented by a man's hand lifted to his mouth.

Power, over a man,—symbolised by a line drawn, in the figure, from the mouth to the heart. Power in general, by a head with two horns.

Full means of subsistence. A circle drawn around the body at the abdomen.

A Pupil. A boy, drawn with a waved line from each ear, and lines leading to the heart.

A Doctor. A figure with a plant on its head, and two wings; the latter denoting ubiquity.

Night. A finely crossed or barred sun; or a circle with human legs.

Rain. A dot; or a semicircle filled with water, and placed on the head.

Heaven, by three disks of a sun; is also understood to mean three days journey.

Landing after a Voyage,—by a tortoise.

We are told of war-songs and love-songs composed in this very primitive way; but it would seem as if, in these cases, the reader required even greater poetical inspiration than the writer. It is likely that these songs were well known to the people beforehand, and their figurative paintings just served to recall what existed in the memory. It is a kind of mnemonic writing, and it has been used for similar purposes by missionaries with some success. Thus, in the translation of the Bible in the Massachusetts language, by Eliot, the verses from 25 to 30, in the thirtieth chapter of Proverbs, are expressed by an ant, a coney, a locust, a spider, a river (symbol of motion), a lion, a greyhound, a he-goat and a king, and a man lifting himself to take hold of the heavens. No doubt these symbols would help the reader to remember the proper order of verses, but they would be useless without a commentary, or without a previous knowledge of the text.

Testera, who went to America a few years after the taking of Mexico, finding he could not learn the language of the natives, taught them the bible history and the principal doctrines of the Christian religion by means of pictures; and

these diagrams produced a greater effect on the minds of the people, who were accustomed to this style of representation, than the other means employed by the missionaries. The North American Indians, in particular, take the name of some animal,—say the blue-snake; and the signature to convey deeds of land, etc., consists of the outline, drawn with a pen, of the animal whose name they bear. Belts of wampum generally consist of coloured shells, in the form of beads, strung upon a thong; by these they recollect events, and they serve instead of writing, being variously constructed for different purposes.

Squier, in vol. ii, *American Ethnological Transactions*, gives an account of a *sculptured tablet* found in a mound near Cincinnati, in 1841. It is of compact sandstone, five inches long, three broad, and half-an-inch thick. The sculptured face varies slightly from a perfect plane, the figures being in low relief. Near each end are notches; twenty-four at one end, and eight at the other. Without alluding to the resemblance of it to the Egyptian cartouche, it will be sufficient to direct attention to the reduplicate of the figures, which resemble somewhat the stalk and flower of a plant. The sum of the products of the longer and the shorter lines gives this result: $(24 \times 7 = 168) + 25 \times 8 = 200 = 368$, three more than the number of days of the year; upon which the suggestion was advanced, that the tablet had an astronomical origin, and constituted some sort of calendar. We may, perhaps, find the key to its purpose in a humble, but not uninteresting, class of southern remains; viz., that in Mexico, and in the mounds along the gulf, have been found stamps of burnt clay, the faces of which are covered with figures, fanciful or imitative, all in low relief; these were used in impressing ornaments upon cloth or prepared skins of the people possessing them. They exhibit the concavity of the sides to be observed on the relic in question, and also a similar reduplication of the ornamental figure,—all betraying a common purpose. In a word, merely an Indian printing-block of stone. Tylor, in his *Anahuac*, p. 228, states that, in the museum in Mexico, there are stamps in terra cotta with geometrical patterns for making

lines and ornaments for the vases before they were baked, and for stamping patterns upon cotton cloth, which was one of their principal manufactures. At Cholula, he procured some similar, ancient terra-cotta stamps.

West Indies. These islands could have been easily peopled from Florida, Yucatan, or from the south, for the Island of Trinidad is only a few miles from the mouths of the Orinoco. The peopling must have been at a very early date, for we find little else than the colour of the inhabitants to identify them with the Red man of America. When discovered by the Spaniards, there were two great families,—one peaceful, say the Lucayans; the other warlike,—to these was given the name of Galibis or Caribs. Their habitations were principally of branches of trees; thus, few or no stone remains or lasting works of art are found.

Schomburgk, in his *Ethnological Researches in Santo Domingo*, in 1851, alludes to some picture-writing executed by the Indians after the arrival of the Spaniards, which is to be seen in the caverns of Pommier. These pictures are traced with charcoal on the white walls of the caves, consisting, among other things, of men, birds, utensils, and ships of European build. In one of the caves is a drawing of a large bird with a ship on its back, which, he says, may be "a symbol of perhaps deep signification."

Mexico. Here was invented a system of writing, the signs of which expressed both actual ideas and a recollection of the past. Mexican picture-writing is an example of the graphic system primitively adopted by all nations who have invented writing by themselves, commencing with the figurative, or simple linear representation of the object which was wished to be recalled to the mind. The Toltecs (builders in stone) may have caused their sacred or historical books to be compiled, in the seventh century, of figurative, and even of some symbolic figures. These books contained a description of heaven and earth, migrations of nations, national mythology, precepts of morality, etc.; indeed, all the relative ideas of which were sufficiently expressed by their picture-writing when Cortez discovered Mexico.

We have to await the long-promised work of M. Aubin and Mr. Squier on the exact nature and use of the systems of representation of the aboriginal nations of Mexico and Central America. Mr. Squier informs me, that most of the Mexican MSS. in our principal libraries are mere ritual calendars; while the more valuable historical documents have been destroyed by the Spaniards, scattered and lost. The ponderous tomes of Mexican picture-writing, published by Lord Kingsborough and Aglio, are not to be placed in the same category with the pictorial scratches of the Red man of the north. They are more artistic in character, more conventional in their structure, and are more definite in their meaning. They are coloured, and written on a prepared paper, and also on skins, and in many respects are on a level with some of the hieroglyphic inscriptions and papyri of Egypt.

Acosta tells us, that the Indians in his time were in the habit of reciting, from memory, the speeches of their ancient orators and the songs composed by their poets. As it was impossible to acquire these entirely by means of their picture-writing, care was taken that these speeches and poems should be learnt by heart. When the Spaniards took possession of the country, they taught the Indian to read and write the Spanish language, and in which the natives have written much of their history.

Boturini made the first collection of Mexican MSS. from those that remained. In 1736, he was sent to Mexico to regulate some ecclesiastical matters. He devoted eight years to his researches. The Mexican viceroy despoiled him of the greater portion of his collection; and when he made his escape with the remnants, he was taken prisoner by an English cruiser, and lost his treasures. That portion of his collection which remained in Mexico was added to by Veytia and Gama, but was ultimately sold at public auction. Humboldt, who was at that time in Mexico, acquired some of the manuscripts, which he gave to the Berlin Museum. However, the most valuable portion of the Boturini collection is now in the hands of M. Aubin, in Paris, who was sent to Mexico, in 1830, by the French government, and he has devoted nearly twenty years

to the same work which Boturini had commenced a hundred years before. "We owe to M. Aubin," says the reviewer of the "Popol Vuh" (*Frazer's Magazine*, March, 1863), "the first accurate knowledge of the real nature of Mexican writing; and we look forward with confident hope to his achieving, in his own field, as great a triumph as that of Champollion, one of the decipherers of the hieroglyphics of Egypt.* We may call the Mexican picture-writing a peculiar and mixed system of figurative or pictorial and phonetic, rather than hieroglyphical. It was for ages well known in Mexico and Central America. It is supposed that, at Palenque and Copan, there existed more advanced characters. I will briefly divide what we at present know on this subject into three forms:—

1st. The more ancient; viz., the pictorial, and its phonetic value; one example represents the serpent, woman, mother of the human race,—the cartouches above refer to the figures.

2. We will call symbolic, as seen on the Antiquities of Copan and Palenque, is a more advanced character, and will some day, perhaps, be read through the Maya language of Yucatan.

3. Is that of Testera and the early Franciscans. The word in the Mexican language most nearly representing *pater*, was *pantle*, a flag; so they put a flag for *pater*. In place of *noster*, a word resembling their *nochtli*, a *tuna*, or fruit of the cactus; and so on to the end of the prayer. "Amen,"—*a*, the root of *atl*, or water; *metl*, from whence *men*, the root of the agave, formed "amen." Now let us take the word *Moquali-zoma*, or Montezuma:—*Mo*, from *montli*, a trap; *quah*, from *quauhtli*, an eagle; *zo*, from *zotl*, a spine or bleeder; *ma*, from *mantli*, the hand: the *auh* is the possessive of *atl*, water, in *quauhtli*, the eagle. So the word "Montezuma" was represented by a trap, eagle's head, a spine, a wand, and running water.

Itzcoatl, means the serpent studded with arrows of obsidian,

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* See *Mémoire sur l'Ecriture Figurative et la Peinture Didactique des Anciens Mexicaines*, p. 1, Paris, 1849. L'Impression de cet ouvrage n'est pas terminée. This work is noticed in B. de Bourbourg's valuable work, in four volumes, *Histoire des Nations Civilisées du Mexique et de l'Amérique Centrale*, 1857. In the first volume there is much as to the modes of deciphering of the Mexican hieroglyphics.

and was the name of the fourth king of Mexico. He is represented by a serpent, *coatl*, furnished with points, or lances of obsidian, *itztli;* easily interpreted phonetically by the sound of the word, or ideographically by its grammatical acceptation. But in the *Codex Vergara* this word is written syllabically by means of *itz-li*, the root of which is *itz*; of the vase, *co-mitl*,—root *co*, and water, *atl;* here there is neither ideography nor symbolism. Such words as *Pater Noster, Amen, Montezuma*, and *Itzcoatl*, we may look upon as so many keys to the decipherment of Mexican picture-writing, and where the phonetic, ideographic, and symbolic are mixed. I will add a few of the purely figurative representations, which were, doubtless, the groundwork of their graphic doings:—

Yei, the number three, by three dots, circles, or lines.

Eztli, blood, by red waved lines.

Itzli, obsidian, by a lance or arrow-head.

Ixtli, the eye, by an eye.

Olli or *ulli*, Indian-rubber or a ball, by a ball.

Izteli, the nail of a finger, by the nail on a finger.

Ome, the number two, by two dots, circles, or lines.

Humboldt observes that, before the introduction of the hieroglyphical painting, the Mexicans used a *quipu*, or knotted strings, for keeping their accounts. This is doubted by Prescott; however, it is asserted that Boturini procured such from the Tlascalans, who called this arrangement Nepohualtzitzin. It has been said that the Chibchas of Bogotá used a *quipu*, this has been denied by Mosquera. The Peruvian *quipu* may have become known to the Chibchas when the Incarial armies, having conquered Quito, marched into the south of New Granada. I do not find that the ancient Quitus, or their conquerors the Scyris, knew the *quipu*, or knotted coloured strings, of the Peruvians.

Central America. Mr. Squier distinguishes widely between the system of representation used by the Mexicans and that used by the more advanced Central American nations, who attained to a nearly perfect hieroglyphical system, essentially phonetic, and to which he believes the languages now spoken by the Indians in that country, of which the Maya

may be taken as an example, bears the same relation that the Coptic was found to sustain to the hieroglyphics of Egypt. (Whilst this paper was going through the press, the Abbé B. de Bourbourg has communicated to me the discovery at Madrid of Bishop Landa's *Relacion de las Cosas de Yucatan*, say of 1570, in which there is an account of the *Maya hieroglyphic alphabet*. This is the first of such a character observed in the New World, and will shortly be brought by me before the Anthropological Society.)

Nations who could compose, as the early Mexicans did, such a work as their voluminous *Sacred Books*, which, however, are said to have been taken from an older composition, viz., the *Popol Vuh*, or sacred book, or history of Guatemala, must have been farther advanced in their own civilisation than we have heretofore supposed. Some details of the *Popol Vuh** will be found in a paper of mine to the Royal Society of Literature, in their *Transactions* for 1863. Las Casas gives an account of the Guatemala Chronicles, composed in figures and characters, by which they understood all they wished; and they had great books, curiously and so ingeniously composed that we might say that our letters were not of very great importance to them: but the greater portion of these compilations were burnt by the early Spanish monks.

Nicaragua, Costa Rica, and Chiriquí, the last just within the boundary of New Granada. Of Nicaragua and Costa Rica, we are still dependant on Mr. Squier, who promises details connected with the ancient architecture, sculpture, hieroglyphs, and languages.

I now come to a region formerly known as Veragua, containing the interesting district of Chiriquí, or the Valleys of the Moon. A few years since, there were discovered here vast assemblages of ancient tombs, containing a large quantity of objects, in gold, of men, women, animals, etc., celts and pottery;† on the latter were found figures or characters. The

* See the Abbé de Bourbourg's work on the subject; also, his *Grammar of the Quiché Language*, and *Drama of the Tun*. Trübner: London.

† See my papers to the Society of Antiquaries, and to the Ethnological Society, London, 1863.

most interesting is the *Piedra Pintal*, or engraved rock, at Caldera, N.N.E. of David. It is fifteen feet high, and fifty in circumference, and covered with figures representing scorpions, human heads, the sun, other figures, and peculiar characters.* Several columns are seen in the town of David, where they have been used for present building purposes; the characters on them differ from those on the *Piedra Pintal*. In this collection of figures, we have a different form from the Mexican; and we have not the cartouche, but single figures, as if they were attached to the symbols,—probably the history of their meaning.

New Granada. We have ever to deplore the untimely death of the South American Caldas by the Spanish general, Murillo, in 1816, for being a patriot and a philosopher, and the burning of twelve cartloads of his manuscripts and books. In the former there were, doubtless, details as to the early history of the Chibchas, which might have thrown some light upon their approach to the invention of graphic art. Velasco, in his *Hist. de Quito*, says, that the ancient Indians of Nieba used hieroglyphics and characters cut, in relief, in stone, many of which are to be seen, particularly at the *Piedra Pintada*, or rather sculptured stone; and that he himself saw these large stones, full of hieroglyphics, figures of animals, branches of flowers, and other strange characters of various angles and figures that appeared like numerals. I know of no drawings of these.

We now come to the period of the Chibchas, whom the Spaniards found on the table-lands of Bogotá and the neighbouring country. The government was under two great chiefs, the Zipa, a military one, the Zaque, a pontiff. Their mythological and other traditions were peculiar to themselves; and it is to this last, which is in connexion with the graphic art, I have to call attention. The priests noted the periods of sacrifice, etc., engraving them on stones,† with symbols and figures. The hieroglyphics, or rather outline of figures connected with

* See drawing in my *South American Antiquities*.
† See drawings in my *South American Antiquities*.

a calendar, one of its readings being connected with the Chibcha numerals.

1. *Ata,* is a frog or toad in the act of jumping; water.
2. *Bosa,* a nose.
3. *Mica,* the moon, or two eyes.
4. *Muyhica,* two closed eyes, or darkness.
5. *Hisca,* life, or the union of two figures, was the symbol of fecundity.
6. *Ta,* the harvest.
7. *Cuhupqua,* granaries, is like a basket.
8. *Sahuza,* the tail; figured by a cord and pole, by which they made the circle for their habitations and fields.
9. *Aca,* two toads, or one forming from another.
10. *Ubchihica,* a feast; or an ear.
20. *Gueta,* or Felicity, is meant for a toad enjoying itself at full length.

Humboldt tells us, that in large spaces between the Cassiquiare and the Atabapo, only inhabited by the tapir and the social apes, and wholly destitute of human beings, figures graven on rocks show that these wildernesses were once the seat of some degree of intellectual culture. Between 2° and 4° N. are found rocks of granite covered with colossal figures of alligators, jaguars, the sun, moon, and domestic utensils. Humboldt is inclined to view these remains as traces of an ancient civilisation, belonging, perhaps, to an epoch when the tribes, whom we now distinguish by various appellations, were still unknown. Humboldt, in his *Travels,* ii, p. 395, says, the "Amazon stones" are of green jade, and found in possession of the Indians of Rio Negro, worn suspended from the neck, like amulets, loaded with inscriptions and figures, and are vestiges of anterior civilisations, not the work of the present owners.

Ecuador, or Quito. The following is about all that has been preserved of the first races we know anything of. That there was a ruler called the Quitu, who was conquered by the Caranes, a coast nation, about 980 A.D. We know nothing as to their graphic records, but that they had small pieces of wood, clay, and stones, of various sizes, colours, and forms, by

which they expressed principal occurrences; these were kept in compartments in their temples, tombs, and dwellings. According to the reading of these coloured stones by the early Spaniards, from information given by the Indians, seven hundred years is allowed for the reigns of eighteen or nineteen Scyris, up to the death of the last, Cachi Duchicela, who was conquered by Huayna-Capac, in 1497, A.D. All I have to offer of the graphic art of the Scyris (see p. 93 of my *South American Antiquities*), is something like an inscription on an embossed gold earlet, lately found in a tomb at Cuenca, in the county of the ancient Cañares. It may, perhaps, be only ornamental.

PERU. In regard to graphic memorials, I will just advert to Fernando Montesinos, but who is not a good authority. At the beginning of the second half of the seventeenth century, he completed his manuscripts relating to the *Historia Antigua del Peru*, which were deposited in the convent of San José in Seville. Some two hundred years afterwards (in 1846), these memorials came to light. Montesinos indulged in the dream that Peru was the land of Ophir of the times of Solomon, and that America had been peopled by repeated emigrations from Armenia.

Five hundred years after the deluge begins the list of the Peruvian rulers. His third ruler is Huainaevi-Pishua; during his reign the use of letters was known (?) and the *amautas* or learned men, taught astrology, and the art of writing on plantain leaves (?) Sixty-fifth ruler, Titu, there was civil war. Peru counted many simultaneous tyrants. All was in confusion, and civil disturbances caused the entire loss of letters. Titu looked upon letters as the source of public troubles; and when an amauta, some years after he had been on the throne, invented a new sort of characters, the king had him put to death. Seventy-eighth ruler, Topa Cauri Pachacuti VI. The ninth year of his reign is said to correspond with 3,500 after the deluge. He prohibited the people he conquered from using the *quellca*—a species of paper, made from plantain leaves, to write upon,—and the use of letters; but he introduced the use of the *quipu*, or knotted strings. It is some-

times asserted that the more ancient Peruvians had two kinds of writing,—or rather means of communicating their ideas; the one was by a figurative character, of which no reliable account exists; the other, of knots made on coloured strings, viz., the *quipu*. Before examining the *quipu*, I will notice the old engravings on stone, scattered about Peru.

At the Corralones, eight leagues north of Arequipa, are a multitude of sculptures on granite, representing figures of animals, flowers, and fortifications, which, according to Tschudi,* may tell of events anterior to the times of the Incas. In many parts of Peru, chiefly in situations greatly elevated above the level of the sea, are vestiges of inscriptions, very much obliterated by time. One represents such a stone, two feet broad, which Tschudi found in an ancient settlement a league from Huari. In the town of Huaytara, there are ruins similar to those of Old Huanuco; and here is a mass of granite, many square yards in size, with coarse engravings like those of Corralones. We are told that, in the last century, a missionary among the Panos of the Ucayali reported to have found thereabouts manuscripts on a paper made of the plantain leaf, with *hieroglyphs and simple characters*, containing, according to the Indians, the history of their ancestors. It remains to be ascertained whether they referred to the history of a nation who came from the north or east, or whether this is a vestige of an ancient civilisation of that region. Tschudi informs us that, among the Indians of the Ucayali of the present time, at the birth of a child, the name of some animal is given to it; the witnesses of the ceremony mark, with a wooden pencil, some hieroglyphical characters on two leaves, which are carefully preserved, and on the death of the Indian, deposited in the grave with him.

Among the sacred pottery from the Peruvian tombs, there is one in the form of a human figure, as seen in Rivero and Tschudi; they suppose it to be that of a priest offering the sacrifice (of *chicha*,—a drink made from Indian corn), or imploring a good harvest. Here a mystic belt is worn; I think

* See Rivero and Tschudi, *Peruvian Antiquities*.

it means something more than mere ornamentation. It may have been found at Pachacamac. In the British Museum is a vase of a female figure; may be that of a priestess of some of the coast nations. It has six angular figures on the forehead, and something like a square tablet on the breast. In my *South American Antiquities*, I gave a drawing of a painted vase from the Chimu country of Trujillo. The vase I have deposited in the British Museum. It was, probably, their god of war. The head is that of their wild pig. The dress is symbolic. It holds a club in the left hand, a shield and arrows in the right. There are two symbols; one is like an insect flying, something similar to a figure on the Athenian vase of Electra at the tomb of Agamemnon.

The Peruvian Calendar, or Zodiac. This I consider one of the most interesting Peruvian monuments. It is of gold, and was found, not many years since, in a tomb at Cuzco; it came into the possession of General Echenique. Mr. Markham, when in Lima, took a drawing of it, and in his *Cuzco and Lima* refers to it thus: "I have seen a golden breastplate, or sun, and the figures upon it are stamped, being convex on the outer side." Mr. Markham was good enough to give me this drawing. On examination I suppose it to be an Incarial calendar, or zodiac, and the only example I know of. Here are figures of the sun, moon, stars, and other representations. In my work on *South American Antiquities* I give a drawing and details of this object. Acosta (book v, cap. viii, p. 267), says the Peruvians had symbolical paintings; for at the beginning of the conquest the Indians made their confessions by paintings and characters, some of which indicated the Ten Commandments. Such a passage as the above might lead us to infer that the "symbolical paintings" were of Peruvian origin; but from what I can make out, I fear it is more likely that the first Spanish monks and missionaries originated the idea of speaking to the ear through the eye, that is, expressing sounds by means of outline, which was, however, familiar to the ancient Mexicans. In 1860, my friend, Mr. Helsby, showed me the photograph of the skin of an animal with peculiar characters on it; his brother had taken it at La Paz,

in Bolivia. Mr. Helsby informed me that, being in Valparaiso in 1858, he showed the photograph to Tschudi, who promised to examine the said skin when he got to La Paz. This he did, and wrote to Mr. Helsby that the characters on the skin were, most probably, indicative of some Christian forms of worship. This information takes away at once the idea that the characters were ancient Peruvian. In 1862, a friend of mine, just returned from Bolivia, informed me that Tschudi went to the museum of La Paz to inspect the figured skin,* and at first thought he had fallen upon a specimen of pre-historical Aymará writing. This idea Tschudi communicated to a lady of La Paz, who told him that similar figured skins were still done by an old Indian at the village of Collocollo (a few miles east of the ruins of Tia-Huanaco), and could be purchased for a dollar. This fact was proved to Tschudi; and that it was a figurative way resorted to, most probably, by the first Spanish priests to teach the Aymará Indians to pray, confess, and give them an idea of the ceremony of the Mass.

The Peruvian *Quipu*.† The Inca race does not appear to have had any characters for simple sounds; but they had a method by which they incorporated ideas, which consisted in the dextrous intertwining of knots and strings so as to render them auxiliaries to the memory, namely by the *quipu*. It was generally of twisted wool, consisting of a cord as the base of the document, and of threads, more or less fine, fastened by knots to it. These threads included the contents of the *quipu* expressed by knots. The size of the *quipu* varied; sometimes the base-cord was five or six yards long, at others, not more than a foot; the pendant strings rarely exceeded a yard and a half. Some have been met with weighing over twenty-five pounds in weight. The different colours of the threads had different meanings: thus, red signified war or a soldier; yellow, gold; the white, silver or peace; the green, maize, etc. In the arithmetical system, a single knot was ten; two knots joined, twenty; a knot doubly intertwined, one

* I am told that there are two or three of these pictured skins in the museum of La Paz.

† From *Quepani*, the Quichua verb "to count by knots."

hundred; triply, one thousand; two of the last united, two thousand, etc. Not only is the colour and mode of making the knots to be considered, but even the mode of twisting the thread, and particularly the distance of the knots from the junction of the thread with the base of the cords, are of great importance to a proper understanding of the *quipu*.

It is probable that these knots were first applied to purposes of enumeration; but in course of time this art was so much perfected that the *quipu-camayus*,* or readers of these records, attained the art of expressing by knots historical relations, laws, etc., so as to transmit to their descendants the most striking events, and thus the *quipu*, or knotted coloured strings, supplied the place, in a measure, of documents and chronicles. When a *quipu* came from a distance, it was accompanied by a verbal commentary, to indicate the subject matter of which it treated. The officials had certain signs at the commencement of the mother-thread, or base-cord, which at times had a meaning intelligible to them only. Repeated attempts made in one day to read the *quipus* have proved failures. Each single knot represents some notion or thought, while there is wanting (for a meaning) the conjunctions or links. Besides, there is another impediment in the interpretation of the *quipus* found in the tombs, and that is, the want of a verbal commentary to explain the subject matter of the document. It is supposed that there are Indians in Peru who know how to decipher many of these intricate memorials, but that they guard their knowledge as a sacred secret inherited from their ancestors. One of the Inca Pachacutec's sayings was, *He who would dare to count the stars of heaven, not knowing the meaning of the knots on the quipu, is only to be laughed at.* A *quipu*, disinterred near the Temple of Pachacamac, near Lima, consisted of a thick cord to serve as a base, and of strings more or less thick of twisted wool, in which are knots at certain distances. The strings, some two or three feet in length, are of various colours.

A fanciful reading of the *Quipu*. In the first volume of the

* From the Quichua verb "to create," or, *camani*.

Mercurio Peruano, 1791, it is observed, that the *Peruvian Letters* of Madame Gratigny incited a member of the academy of La Crusca, about 1750, to describe the *quipu* with too much assurance, and might lead some to believe that he was a *quipu-camayoc* of the Incas. In Silvestre's large work on graphic art, it is stated that the said academician supposed a system of coloured strings, the five principal of which should represent the vowels. The same academician drew up the plate belonging to the notice, and framed an alphabet to it, which did not appear inconvenient, at least to his imaginative mind. It has for its groundwork forty Quichua words. The first is *Pachacamac,* God, or, Creator of earth; and if he required to write the last syllable, *mac,* four knots must be made on the string, which, conventionally, represents *Pachacamac.* He intended this system for the amusement of the Duchess of San Severino.

Spurious *Quipu.* In the *Westminster Review,* xi, 1829, there is an elaborate review, by General T. Perronet Thompson, of *A Prospectus of the Quipola,* printed by J. Phair, 69, Peter Street, Westminster, 1827, 64mo, p. 18. In the prospectus it is stated, that one Alexander Strong purchased this *quipu* and box from the mate of a merchant brig, Robert Baker, for ten pounds. Baker said it had come into the possession of a native of Lyons, Rosenberg Vestus, who got it from the family of a chief in Chile, of the Guarcos (?) who considered himself a descendant of the Incas, and who had fled from Peru to avoid the Spaniards. In the fourth volume of Lord Kingsborough's large work on *Mexican Picture Writing,* there is a drawing of this spurious *quipu,* also, of the top and sides of the box; the front view reminds one rather of Warwick Castle than the Temple of the Sun; and in vol. vi, p. 271, of same, *Mex. Antiq.,* is the following, relating to this, which I call a spurious *quipu*:—

"Some *quipus,* alleged to be Peruvian, are in Lord Kingsborough's possession; they are in a large gilt box, curiously carved. These *quipus,*—which, perhaps, are Chilian instead of Peruvian, and modern instead of ancient,—if they are a forgery, at least display ingenuity on the part of the person

who composed them. They consist of knotted strings of cat-gut, which are fastened in loops upon different rings, each ring forming a separate history, and the loops following in their proper order on the rings; the first loop being read downwards,—or, in other words, the knots counted from the upper extremity which joins the ring to the lower extremity, which meets it again. These knots are of different colours, and it is impossible not to imagine that in the arrangement of the knots, first in loops which fasten at the ends like a necklace, and afterwards of the loops themselves on rings, they nearly correspond in outward appearance to the ancient Peruvian *quipu*. The name of *Registros de Ramales*, which Garcia gives in his second book of the *Origin of the Indias to the Real Quipus*, as well as his description of them, are singularly applicable to these referred to."

In M. E. Rivero's *Researches*, published in Brussels not long since, in the second volume, it is stated that this *quipu* consists of seven bundles of knots of various sizes, colours, and forms. They are cords made of the intestines of animals, and refer, *as is said*, to the history of the New World up to its discovery by Columbus (?) It has a sort of glossary, composed of fine slips of dressed leather, painted with various sorts of knots along the said slips. On the opposite side of each knot is a word or signification in Latin, and the intermediate spaces—or between knot and knot—are adorned with figures. Rivero supposed that this had been done by some missionary.

Chile. Frezier informs us that the Araucanos, to keep the account of their flocks and preserve the memory of particular affairs, make use of knots of wool, which, by the variety of colours and knotting, serve instead of characters and writing. The knowledge of these knots, which they call *quipos* (which I suppose they have learnt from the Peruvians), is a science and a secret which parents do not reveal to their sons till they are about to die; and, as it often happens, that for want of a ready wit they do not comprehend the mystery, those knots occasion them to mistake, and so become of no use. To supply the want of writing, they employ those who have good

memories of the ill-usage of the Spaniards towards their ancestors, when they subdued them, which perpetuates their aversion for them; but when they are put in mind of the advantages they afterwards gained over those strangers, when these drove them from five towns they had built in their country, their natural fierceness revives, and they only wish for another opportunity to drive them again from Concepçion. This was written about 1712. In 1792, according to Stevenson, a revolt of the Araucanos took place near Valdivia, and, on the trial of the accomplices, Marican (one of them) declared that the signal sent by Lepitrarn was a piece of wood, it was split, and found to contain the finger of a Spaniard; it was wrapped round with thread having a fringe at one end, made of red, black, blue, and white worsted; that on the black was tied by Lepitrarn,—four knots to intimate that it was the fourth day after the full moon that the bearer left Paquipilli; that on the white were ten knots, indicating that ten days after that date the revolt would take place; that on the red was to be tied, by the person who received it, a knot if he assisted in the revolt, but if he refused, he was to tie a knot of the blue and red joined together; so that, according to the route enjoined by Lepitrarn, he would be able to discover, on the return of the messenger, how many friends would join him; and if he dissented, he would know who it was by the place when the knot uniting the two threads was tied. So, although they may have had the Peruvian *quipu*, they had also means of making one for themselves.

Resumé. In the preceding observations, I have adverted to the languages of the New World, which do not appear to have any connexion whatever with those of other portions of the globe, save and except some few words which may be traced to natural sounds. Language in Mexico and Central America was represented by figurative and even idiographic signs when first visited by the Spaniards; but there had existed a pre-Mexican period, or periods, in which there appears to have been known something more advanced; but no trace of an alphabet has yet been presented to us. In Bogotá we find pre-Chibcha and Chibcha periods, languages, and figurative representations,

but quite different to those of Mexico. If we go to Peru, we discover the remains of pre-Incarial times, with their monuments of stone, covered with well-sculptured figurative and other objects, but without hieroglyphics. When we come to the Incarial times of Manco Capac and his successors, we have the fine Quichua language in particular, but there is no alphabet.

Numeration has commenced generally in America by counting the fingers and toes. Some of such systems have been circumscribed, whilst those of Mexico and Peru could go to any extent; however, here again figures had not been arrived at. In Mexico, strokes, or lines and dots, were used; and in Peru, one of the principal uses of the knots on the *quipu* is to serve the purpose of numbers.

We are accustomed to hear of the "semi-civilisation" of the New World; but I would ask, bearing in mind what I have brought forward in this paper as to the mental actions of the Red man, whether the intellectual development, which was found there by the Spaniards, was not rather nearly the full extent of civilisation the aborigines could arrive at, and this in conformity with the mental powers the Red species had been endowed with. I do not quite mean to say that their peculiar intelligence could or cannot accept somewhat of the civilisations of other species of men; but as yet we have to learn how much, and if their mental organisation can be brought up equal to the intelligence of the White man; then, independent of the mental, there are the physical differences.

As regards the generally red colour of the skin; the smaller and differently formed cranium, the brain of which would conform to it; from what we know of some physical characteristics of the brain of the Negro, it may be supposed that the brain of the Red man has its own physical and even mental differences when compared with that of the White man; the mental in particular may account for the Red man's peculiar civilisation. There are also osteological differences; and from observations as to some not over-satisfactory peculiarities in regard to the progeny of the White and Indian, which would lead

us to infer that there are some peculiarities in the generative organs,—should this fact be sufficiently proved, it will be in favour of polygenistic views.

Looking with somewhat of a critical eye at the forms of the languages, numbers, want of alphabets or pure hieroglyphics, architecture, forms of government, and especially the very little he has learnt from the White, I have placed the American aborigen about third in the descending scale of separate species. From what we know, after more than three centuries and a half of observation of the Red man, it may be questioned whether he can advance much farther than his own peculiar organisation allows him. If we hold the opinion of the unity of the human species, and that the New World was peopled from the Old, any language or civilisation taken then, is lost, for no trace of any eastern or western tongue is to be found in America. If we side with the polygenist view,—and what I have presented in this paper tends to that direction,—we find it to be the more logical inference. Blumenbach, with unity views, gave us *five* races; Pritchard, *seven*; other writers many more. On the other side of the question, among the polygenists, in Nott and Gliddon we have *eight* great realms, or, in other words, *eight* different creations, which some ethnologists have further extended.

VI.—*Viti, and its Inhabitants.* By Wm. T. Pritchard, Esq., F.A.S.L., F.R.G.S.

The islanders of the Pacific, with their coral-bound homes, present a field for research and observation at once extensive and interesting. The question, "Whence came they?" has often been asked, and as variously answered. Without sketching the theories that have been advanced to account for their origin, I shall simply collate the results of my personal observations while residing amongst them during a period of fifteen years,—limiting my remarks, on the present occasion, more immediately to Fiji, Tonga, and Samoa, which groups lie contiguous to each other,—from Fiji, in the west, eastward two hundred and fifty miles to Tonga, and thence north-east about five hundred miles to Samoa.

The people who *now* inhabit these three groups are more or less mixed races, though originally they were unquestionably totally distinct. The Samoans and the Tongans have identically the same origin; the latter, however, shewing *now* a greater intermixture with their nearer neighbours, the Fijians, than the former. The Fijians have a distinct origin. The former are unquestionably of Malay origin, the latter of Papuan.

Look at the Fijian. His skin is dark, rough, harsh; his hair, naturally black and copious, is bushy, persistently frizzled, almost wiry. Indeed, it seems something between hair and wool. His beard, of the same texture, is equally profuse and bushy, and is his greatest pride. His stature is large, but somewhat less than that of the Tongan or Samoan; his muscular development is more perfect, while his limbs are less rounded, and his figure generally slighter. His eye is restless, his manner suspicious, his movements light and active. Look now at the pure Tongan or Samoan. His skin is a dark *red-*

dish-brown, smooth and soft; his hair, though naturally black and copious, is coarse, seldom wavy, generally straight. He is almost beardless, and abhors a hairy chin. His stature is herculean, his limbs well rounded, his figure symmetrical. His manner quiet and confiding; his action is strikingly graceful. His eye soft and subdued; his movements lack energy and quickness. Compare, further, the profile of the Fijian with the profile of the Tongan or Samoan, and it is at once observed that the former is more prominent than the latter; the forehead higher and more expansive.

But though their origin is thus apparently so distinct, there is, at the present day, clearly traceable a wide-spread intermixture of the two races inhabiting these three groups. Taking first the Fijians, as nearest the locality whence they all primarily came, the Papuan stock is found paramount, tinctured with a Malay element as we advance through this extensive group, eastward towards the Tongan Malays. Still advancing eastward till we reach the home of the Tongans, we find amongst them distinct traces of a Papuan element, imported from the Fijian Papuans. Again advancing till we reach the Samoans, we find they are the Tongans, with traces of the Tongan tincture of the Fijian Papuans. As an illustration (selected at random from among many) of this groupal intermingling of the Polynesian Malays with the Fijian Papuans, I name the Samoan chief, Pulepule, whose progenitors, some generations back, sprang from Tonga, where, again, the family traces early maternal connexion with Fiji. And the features, and general development of this chief Pulepule, carry unmistakable evidence of this fusion of the two races.

On the western coasts of Fiji, there are traces, supported in some instances by family traditions, of an intermixture with the people of Rotuma, an island some 300 miles westward of Fiji. The natives of Rotuma distinctly trace their origin to Samoa, whence, they say, their forefathers drifted in canoes many generations since. And their language, their manners and customs, their physical development and general appearance corroborate the tradition beyond a doubt. In the Macuata (= *Mathuata*) district, on the north-western coast of Fiji, I

have heard very old men relate traditions of the arrivals of Samoans in their neighbourhood, who had drifted away from their homes while out on fishing expeditions; but I could find no direct descendants from them, preserving their pedigree, in any of the local families. And here I cannot omit reference to the fact, that a valley, with its approaches to the sea shore, on the eastern aspect of the island of Wakaia, in the very centre of the Fiji group, has the name of *Samoa*. The valley has long been uninhabited, and there is no tradition respecting the name or the locality; no tribe that claims either the one or the other as its distinct appellation or its early home. But still, I cannot resist the conjecture of an old Fijian priest, that it is the only vestige of a hapless party of Samoans, who, in the remote past, were blown away from their homes, and whose descendants have been exterminated in the wars, of which Wakaia has been the frequent field. In the district of Rewa, and the contiguous island of Kadavu (= *Kandavu*), in the south-eastern limits of the group, there is, at the present day, a tribe known as the "Vosa-namu," which maintains a distinct social and political status in Fiji, and which traces its origin to the crew of a fleet of war-canoes that was blown away from Tonga-tabu, and drifted to Kandavu, many generations since. Those of the crew who survived the perils of the storm and the wreck, took to themselves Fijian wives, and taught their offspring the language, the customs, the traditions, and the worship of the gods of the land they had involuntarily left; and it is the pride of these descendants of those old drifted sailors to maintain the highest reputation in Fiji for smart seamanship and the fleetness of their canoes, as well as to cherish their Tongan antecedents.

This intermixture of the Polynesian Malays with the Fijian Papuans dates from a remote period—the period anterior to the custom of killing and eating all who might happen to drift to Fiji. That this custom, as well as some others, is of comparatively modern date, I conceive is unquestionable. The very old men of Fiji—the repositories of their early lore,—unanimously maintain that there was a time when *it did not exist*. An octogenarian priest—the same mentioned by Dr. Seemann

in his "Narrative,"*—who lived in the valley of Namosi, firmly maintained this to be the fact, in the following account of the origin of the custom:—"In olden times, before my great-grandfather's great grandfather was a priest of Namosi, there were no wars, and many more people and towns than now. The chiefs were contented to live on their own lands. They had not learned to steal each other's women. They had not become jealous of each other. People who came to Fiji in their canoes, and said that they had been blown away from their own lands by strong winds—the lands which their gods had given them,—were not killed. They were allowed to dwell amongst the Fijians, and were considered as of the family of the chief in whose land they arrived. When wars began in Fiji, they helped the chiefs with whom they lived. But afterwards, some of these drifted strangers made trouble; they made things bad after they had become one with the tribe amongst whom they lived. They thought they were very powerful. They had passed through the storms of the sea, and so they thought they could do anything. Some of them killed the chiefs of Fiji with whom they lived, and took their women, while war was going on with another chief. Some of them tried to make themselves chiefs. They said their gods were more powerful than the gods of Fiji. This made the priests angry. So the priests told the chiefs the gods were angry, and that the gods said all who came from other lands to Fiji must be killed. The priests said the gods had allowed these strangers to kill the chiefs and to take their wives, because they were angry with the chiefs for letting these strangers live in the land which the gods had given to the Fijians only. So the chiefs became afraid of the anger of our gods, and killed all the people that came to Fiji in canoes. The priests said that the gods had told them no chief who was killed by a stranger from another land should live in Burotu; and that when the gods were pleased with the chiefs who obeyed the priests, they would send great winds to blow people to Fiji, that the chiefs might kill the strangers, and keep their canoes and their women. So the strangers who came to Fiji

* *Viti: an Account of a Government Mission to the Vitian or Fijian Islands, in* 1860 *and* 1861. By Dr. Seemann.

were killed, because the gods said it should be so." This old man firmly believed that it really was the will of the gods that every hapless castaway on the shores of Fiji should be killed.

The Tongans carefully encouraged the Fijians to settle in their islands. And from the close proximity of Tonga to Fiji, there has, undoubtedly, been a regular intercourse between the two groups, and a corresponding commixture of the races, for many ages; though, in Fiji, the commixture of the races was chiefly limited to the eastern districts, where, protected by the ties of consanguinity, the Tongan *visitors* seem to have been exempt from the custom under which *strangers drifting* to Fiji were killed. The early Tongans who were blown to Fiji by the strong trade winds *before* that custom was initiated, kept in mind the direction of their own islands, as well as the very short time they were drifting from one group to the other. Thus they were emboldened to seek their lost homes. Starting on their return expeditions only with a fair and steady west wind, they reached their islands in safety in two or three days at most. And the wonderful narratives these returned wanderers carried to their countrymen respecting the productions of Fiji—precisely suited as they were to their wants,—led to the organisation of regular expeditions to visit their new-found neighbours. In this way was the early intercourse of these two groups established; and as this intercourse became frequent (maintained chiefly by the Tongans for the purpose of supplying themselves with canoes built of the superior timbers of Fiji), a steadily increasing commixture of the two races commenced, and *now*, in the eastern districts of Fiji, which border on the Tongan group, this intermixture, as already intimated, is so general and so marked, that it is at once perceptible, and gives a character to the natives which readily distinguishes them from those of the interior of the larger central islands, where the Papuan stock seems almost untinctured; and also distinguishes them from those of the west coasts of the group, where the commixture of races has been much less, having been limited almost to the few early arrivals from Rotuma and Samoa previously mentioned. There are distinct traditions in Fiji and in Tonga which corroborate this early intercourse of the

two groups—one of which has been cited by Dr. Seemann,—the Tongan tradition which traces the origin of tatooing to Fiji.

Between Samoa and Tonga, there has been a steady intercourse for many ages. The same people and speaking really the same language, and the relative position of the two groups generally favouring with a fair wind the voyage either way, the absence of this early intercourse would, perhaps, have been more surprising than the fact that it really was maintained regularly in their frail canoes. One of the very earliest traditions of Samoa relates the adventures of two sisters, Ana and Tua, and their brother Sagana (*Sangana*), who sailed from Tonga to Samoa and landed at the west end of Upolu, the central island of the group. From these three, the present political districts of Upolu are still named. Ana, the elder sister, occupied the western end of the island, which is still called Aana, and where the spear and the club are still cherished as apportioned to it by her. Tua, the younger sister, travelling to the east end, settled there, which district still bears her name, Atua, and maintains the *planting stick* as the emblem she assigned to it. The brother, Sangana, settled in the intermediate district, which still retains his name, Sangana, with the orator's *flyflap* as the distinction he bore. There are also Samoan traditions as well as Tongan traditions, which celebrate the exploits of their chiefs in an invasion of Samoa by the Tongans, and there are localities in the interior of Upolu, which are shown (and present visible traces in the remains of a stone wall) as the limits to which the Tongans reached in the war.

Though there are *now* no *visible* traces of any *direct* commixture with the Fijians, there are many *legends* among the Samoans in which the heroes and heroines are gods and goddesses, princes and princesses of Fiji. These legends show a very ancient knowledge of the existence of the Fijians, together with a very clear appreciation of their peculiar customs and habits, and which *imply* a very early direct intercourse between the two groups. The following is a specimen,—a legend which I had from an old chief-orator ("tula-fale-sili") of Saluafata, now dead, whose name was "Le Pule."

"Sina was a very beautiful Samoan princess, related to all the great chiefs of her day, whose heart the handsomest and bravest of Tonga's chiefs had failed to win. The handsomest and bravest of her own land had failed before them. The fame of her beauty had spread to Tonga, and from Tonga to Fiji. Tigilau (=Tingilau) the son of Tui Viti, determined to visit the beautiful princess whom all had failed to win. In the prime of her beauty, young Tingilau, guided by two favourite turtles in the service of his gods, and followed by a fleet of war canoes, arrived at Samoa. Handsome and merry, brave and eloquent, he won the heart of the beautiful Sina. The jealousy of the young chiefs of her own land, would not suffer her to follow the stranger chief. Tingilau told her that in his land the will of the son of Tui Viti knew no check, and he prepared to muster his crew to fight for her. She cooled his impetuous ardour by telling him that 'Sina could not walk to the canoe of Tingilau, the son of Tui Viti, through the blood of her relations.' She told him 'the moon was round and bright,' and asked 'how many men could overcome the resistance of one woman and a few attendant girls, if found strolling quietly on the sea-shore in the light of that full moon?' Tingilau was silent. He examined his mind. Then he told the beautiful Sina that he would retire to drink *kava* (*Piper methysticum*) with the chiefs of his canoes. Sina understood him, and awaited the time for her stroll on the sandy beach in the quiet moonlight. Around the *kava-bowl* sat Tingilau, the son of Tui Viti, and his chosen chieftains, the trusty captains of his fleet. Tingilau spoke to them:—'My father, Tui Viti, your chief, will not let you land in our Viti, if the sound of the drum and the conch do not proclaim the presence of the beautiful Sina, whom all other chiefs have failed to win. This night, as the rising tide wets the pole that moors the canoe, and the cold land breeze brings sleep to the *yellow** Samoan,—have your

* The expression "*yellow* Samoan" has reference to the custom of smearing the body with *turmeric*,—the *rouge* of the Samoans. The expression would be accepted with satisfaction by a Samoan, as indicating his *lighter* skin in comparison with the *darker* skin of the Fijian. The expression further carries with it an idea of dandyism.

sails ready and your paddles out.' Tingilau, the son of Tui Viti, drank his *kava* and returned to the beautiful Sina. Quietly he whispered in her listening ear,—'I think one chief, with three or four faithful slaves, could overcome the resistance of a princess and her three or four attendant girls, as they stroll on the lonely sea-shore to watch the rising tide and the setting moon.' Sina whispered,—'Tingilau, the son of Tui Viti, may know by making the attempt.' The attendants of Sina sang songs that extolled her beauty. The chorus to each song told that no chief could win her heart or carry her off. The attendants of Tingilau, the son of Tui Viti, sang the deeds of their chief. The chorus* told the failure of his suit to win the heart of Sina, and the return to Viti without the beautiful princess.—The midnight was past, the moon was towards the west. Sina and five girls were on the sandy beach, their feet just bathed by the rising tide. Tingilau, the son of Tui Viti, was there with five faithful slaves. Each lifted his silent burden and bore her to the canoe of Tingilau. The mooring poles were left, the sails filled to the cool land breeze. The yellow Samoans slept. The beautiful Sina, who had drawn to Samoa so many young chiefs from other lands, with their fine mats edged with the feathers of the red paroquette, and their brilliant headdresses of shining nautilus shell, and their rich necklaces of bright mother-of-pearl,—the beautiful Sina was away on the sea with the brave and handsome Tingilau, the son of Tui Viti!"

It will be observed that this legend refers to the intercourse of Samoa with Tonga, and of Tonga with Fiji, as well as to a direct intercourse between Samoa and Fiji. But, as already remarked, while there are evident traces of the former intercourse, there are none but legendary evidences of the latter. There are very many legends in Samoa, of which "Tigilau, le alo o Tui Viti,"—"Tingilau, the son of Tui Viti," is the hero.

* The chorus to the song of Tingilau's attendants was designed to throw the Samoans off their guard, and so facilitate the elopement at high tide. This legend I have carefully preserved as one of the indications, in the use of the title "Tui Viti," of a king of all Fiji having really once reigned,—notwithstanding Smythe or Waterhouse.

Throughout the three groups, we find customs common to all, as well as customs peculiar to each. Among the former are the use of kava (*Piper methysticum*), tatooing, circumcision, polygamy, the summary punishment of adultery by death, the custom of cutting off a joint of a finger as a mark of mourning for the dead, the systematic destruction of children before birth, the stooping posture of inferiors in the presence of superiors, the precedence of a brother's claims over those of a son in the rights of succession, the regulation of the rank of children by the rank of the mother rather than by the rank of the father, the mutual and reciprocal dependence of the power of chiefs and the influence of priests,—the system known in Fiji as "vasu," in Tonga as "Tamaha," in Samoa as "Tamasa," under which a sister's children may appropriate all that pertains to their maternal uncles and their offspring,—the appropriation of many totally distinct names to one and the same individual.

So with their traditions. While some are totally different, others are identically the same. For instance, in their cosmogony, the same plant in all three groups is said to have raised the heavens to their present position when the world emerged from chaos. Again, in their descriptions of the future state, it is said in all three groups that a tree stands near the entrance to the world of spirits,—though it happens there is a slight variation in the ordeal through which the spirits of departed chiefs have to pass as they approach the tree, and though at Samoa and Tonga the tree is said to be a cocoa-nut, while in Fiji it is a *Pandanus*.

In Fiji there are no traditions in any way indicating the direction of their primeval migrations. On the contrary, a legend declares that the Fijians were *created in Fiji itself*, and did not come from another land. The legend runs thus: In the sacred valleys of Na Kauvadra (=Na Kauvandra), near the cave where the great god Dengei had his dwelling, the "Kitu" (snipe) built a nest and laid two eggs. The god discovered the nest and admired the eggs, and conceived the idea to hatch them himself. His incubation brought forth a boy and a girl. Taking them from the nest, he placed them under the shade

of a gigantic Vesi (*Afzelia bijuga*, A. Gray), where they were nurtured under his especial protection until about five years old. Up to this age they had been kept separate from each other by the immense trunk of the tree. But now the boy, peeping round the tree, beheld the girl, to whom he instinctively addressed himself, "Great Dengei has hatched us that we may people the land." At the command of the god the land brought forth yams, dalos, and bananas, for their food, and fire for their use. The bananas they ate at once as they grew. The yams and dalos the god taught them first to cook over the fire, and then to eat. Thus the first pair lived, sheltered by the shade of the vesi, protected by the great Dengei, nurtured on bananas, yams, and dalos, until their forms were fully developed and their passions matured. Then they became man and wife, and their progeny peopled the land.

The Somoans have a legend which gives their notion of the creation of man, and implies an early migration from the *Eastward;* and this again is supported, as we shall presently see, by another, fragmentary, legend. The god Tagaloa (=Tangaloa) sent his daughter, disguised as a Turi (snipe) from heaven to find a resting place in these lower regions. In the course of time she found a rock, whose surface was just above the sea. Returning to her father she reported her success. From time to time he bid her visit the lonely rock. Each successive visit found it becoming larger and larger, higher and higher, still it was but a bare rock. Tangaloa one day gave her a creeping plant, and some earth, to take down to cover its barrenness. When next she visited her rock, the creeper had covered it with green. Again, obedient to the command of the god, her father, she flew to her now green rock,—but, behold! the creeper, before so thriving and so green, had withered away! Once more she wandered to her little resting place, and the withered leaves were worms! Yet once more she flew to the little rock, the worms were men and women! This rock, the resting place of the daughter of the god Tangaloa, the primeval home of man, has no name, though its direction is given. It lies to the *Eastward* of Samoa, "i le mata o le toelau," "in the eye of the trade wind," as the Samoans have it.

The Tongan legend of the creation of man, which also implies an early migration from the *Eastward*, says, that the Kiu (snipe), was scratching about on the sands of the sea-shore of an island eastward from Tonga, when it found a creeping plant (*fue*). Continuing to scratch among the leaves, it found the leaves became worms! Still continuing to scratch away, it found the worms transformed into men and women! The name of the island is lost.

The coincidence will not fail to be observed, that in all these legends, varying as they do in details, the *same bird* holds a prominent position. The "kitu" of Fiji, the "turi" of Samoa, the "kiu" of Tonga, is the *snipe*.

The Fijian account of the origin of Fiji itself is very confused and imperfect, omitting to state how or by whom the earth was primarily created. One legend abruptly describes the god Degei, another the god Roko Mouta, as strolling round the coast of Viti Levu; and wherever the long train of white tapa worn by the gods dragged over the land, there appeared smooth sandy beaches; and where it was carried over the shoulders, the land remained rugged and rocky. The outlying islands of the group are mountain tops transferred by gods and goddesses, in their frolicsome moods, from the two large islands, Viti Levu and Vanua Levu—respectively, "Great Fiji" and "Great Land." As an instance: the island of Ono, in the south-eastern limits of the group, is said to be the summit of Koro Cau (=*Koro-Thau*), a mountain in the interior of Viti Levu, borne away in the darkness of night by two goddesses, who, overtaken by the dawning light of day, let it fall in the place were it now stands. So with Thikombia (=*Cikobia*); it too is a mountain top, detached, or rather stolen, from the interior of Vanua Levu, by some frolicsome god.

The Tongans have a legend which states that their group was fished up from the depths of the sea by the god Maui.

The Samoans have a legend which attributes their islands to a freak of the god Tangaloa (=*Tagaloa*), who hurled down from heaven two large stones; one of which is the basis of Upolu, the other of Savaii.

While the Fijians maintain that they were originally created in Fiji itself, the Samoans and Tongans have legends which narrate their early migrations to their present abodes. The Samoan fragmentary legend to which I have already alluded, says that their forefathers came sailing before the trade winds ("toelau"), from the *eastward*, from a very beautiful island, where the sand was very white and the cocoanut trees grew in boundless forests. The name of the island is lost. The Tongans have a similar legend, with the details more faithfully preserved. It runs thus :—There is an island in the eye of the trade wind, *eastward*, called Bulotu. About two hundred gods and goddesses left it to visit the islands which Maui had just fished up from the depths of the sea. So well pleased were they with the islands, that they resolved to remain there, and accordingly broke up their large sea-going canoe to build smaller ones with its material, for use in the lagoons of their adopted home. This desertion displeased the superior gods, who, as a punishment, made their immortality mortal, in fact, changed them from gods and goddesses into men and women. The spot is still shown on the east end of Tongatabu, where they first landed, and still bears the name "Lavega-Toga" (=*Lavenga-Tonga*), "the hitting of," that is, "the landing at, Tonga." The Cromlechs at this place, called by the natives, "Haamoga-Maui"—"the burden of Maui,"—are said to have been carried there by Maui from Bulotu. I remarked to a chief that this legend contradicted the legend of the creation of man from worms, in the "kitu" or snipe story. He promptly and somewhat haughtily replied, "*That* legend is the account of the creation of the *slaves*,—*this* of the origin of the *chiefs*." The Tongans further describe this *same island*, Bulotu, as the paradise which receives the souls of their departed chiefs. The Samoans likewise give the *name* (Pulotu, in their dialect) to their paradise. But there is this difference : the Bulotu of the Tongans—at once their original home and their future paradise,—lies *eastward* from this group, and is an *island;* while the Pulotu of the Samoans—their future paradise only,—is *westward* from this group, and is *under the sea*. The Fijians have a Burotu—but it is purely their elysium,—where their

souls luxuriate in all the pleasures which Fijian imagination covets, and is always described in the most glowing, fervid language. Unlike the Tongan Bulotu, but like the Samoan Pulotu, it is *westward*, and is *under the sea*. The coincidence has already been noted, that all three groups agree in describing a tree, to which certain ceremonies pertain, as standing near the entrance to their paradise. There is a further coincidence—though the Bulotu of the Tongans is *eastward*, the point of departure from Tonga, as a spirit makes its way to paradise, is at the *western extremity* of the island, just as it is in Samoa and in Fiji.

In Samoa I have met with individuals whose features bore a most striking resemblance, in some instances, to the Chinese, in others, to the North American Indians. At Apia, the chief port of Samoa, there lived some ten years since, a girl whose name was Selani. She had the flat face, the high-cheek bones, the small half-closed eye, the peculiar eyebrow, and the straight black hair which distinguishes the Celestials. There is now living at Satapuala, in the Aana district, a chief of high rank, *one* of whose names is "Le Soafa." This chieftain, under any circumstances and at any time, would be readily taken for an American Indian. He has the long receding forehead, the flowing hair, the eye, in short, the whole figure and bearing of the American Indian. These two instances I have selected at random, from among many.

Apart from the local legendary accounts, it cannot, I think, be doubted that the early migrations of the ancestors of these islanders were involuntary, rather than the result of roving dispositions or of the pressure of limited and over-populated homes ;—that, in fact, they were blown away from their homes in their frail canoes, and the conclusion therefore follows that, wherever their first home may have been, the races have been passing involuntarily from group to group, from island to island, through many ages,—sometimes mixing with each other by happening to meet on the same island,—sometimes preserving their respective nationalities by happening to reach uninhabited islands. There are unquestionable instances of these involuntary migrations in late years,—where the voy-

agers, rescued by a timely landing at some island, have amalgamated with the people amongst whom they have arrived. It is, however, remarkable that in all these many instances, the course of the drifted canoes has been from *East to West*, before the trade winds, *and not from West to East*, before the westerly winds, which prevail less frequently, though they blow usually with more fury than the trades. Hence the islanders do not usually venture out on their fishing or travelling expeditions in their frail canoes during a westerly wind,—excepting always the voyage from Fiji to Tonga, when the weather is most carefully observed for some weeks before starting.

On the island of Uea, in the Loyalty group, there are now living the grandchildren of a party of Tongans who were blown away from their islands in a large double canoe. While preserving many of the traditions and much of the language of their fathers, they have grown up initiated in the traditions and speaking the language of the islanders amongst whom they have been born. A hundred years hence, had these regions remained till then unknown, would not the discoverer of that day be as much startled to find the legends and traditions, the philological characteristics, the habits and the customs of the Tongan Malays interwoven with the legends and traditions, the philological characteristics, the habits and customs of the Negrillos, as we now are to find similarity of legends and traditions, philological affinities, and prevalence of substantially the same habits and customs, among the Samoan-Tongan Malays and the Fijian Papuans?

Within the last three or four years, natives from Tokelau (Union Group) have drifted to Samoa in their frail sinnet-bound canoes. Last year a large double canoe, bound from Vavau (Tonga Group) to Samoa, was overtaken by rough weather, and drifted in a very dilapidated condition to Lomaloma in Fiji. The friends of the voyagers gave them up for lost. In about four months it transpired that they were safely housed among the Fijians, fattening upon their yams and pigs. About five years ago, two double canoes, with nearly two hundred people on board, were blown off from Tongatabu, and drifted to the Mikaeloff and Simonoff Reefs, southward of Fiji,

where there happened to be a sandbank, upon which the people rested themselves and repaired their canoes; and in a few days, to escape starvation, ventured to bear up for Ono, the nearest inhabited island of Fiji, which was reached in safety before a south-east trade wind. Had there been land enough for them, not one of the party would have left Mikaeloff; and in due course there would have been discovered a people speaking the Tongan dialect and cherishing the Tongan traditions, to the southward of the Fijians.

In all these instances of involuntary migration, many of the people died from starvation and the effects of continuous wet before reaching land. But those who survived the hardships of these perilous voyages (chiefly by feeding upon the old cocoanuts, which they always carry on every expedition, and on sharks, which they are very expert in catching), quickly recovered their strength and readily assimilated themselves to the natives around them. And they invariably preserved correctly the direction of their lost homes,—the trade wind and the rising and setting of the sun and moon, being their unerring indicators.

VII.—*Some Account of the Astronomy of the Red Man of the New World; including the "Telescopic Device" of the Mound Builders of the United States; another Examination of the Stone Zodiac of the Aztecs; their Method of obtaining a Meridian Line, &c.; Astronomy of Central America, with recent discovery of the Maya; Hieroglyphic Alphabet; the Stone Lunar Calendars of the Chibchas of Bogotá, and probable use of the Gnomon there; the recently discovered Gold-Calendar of the Peruvians and Telescope Tube; their Gnomons, &c.* By William Bollaert, F.A.S.L., Corresponding Member of the University of Chile, of the Ethnological Society, London, of the American Ethnological Society, &c.

"No circumstance in the whole science of Astronomy excites a deeper interest than its application to chronology. 'Whole nations,' says La Place, 'have been swept from the earth, with their language, arts, and science, leaving but confused masses of ruin to mark the place where mighty cities stood; their history, with the exception of a few doubtful traditions, has perished; but the perfection of their astronomical observations marks their high antiquity, fixes the periods of their existence, and proves that even at that early period they must have made considerable progress in science.'"—*Mechanism of the Heavens*, by Mrs. Somerville, xlvi.

In the following observations, my intention is to keep to about the period of the discovery of the New World by Columbus, for the state of Astronomy of the Red man.

It is a general opinion, that the course of population in America has been from the north to the south; which view is based upon the idea that the New World was originally peopled from Asia. It, however, appears to me that there are but very scanty proofs for such an inference.

In the United States, from the Atlantic to the Rocky Mountains, the only ancient remains are mere earthworks and tumuli of earth of an old race, which have been denominated "Mound-

Builders," nations of hunters and warriors; these were in all probability the ancestors of the present remnants of nations and wandering tribes. To the west of the Rocky Mountains the Red man appears to have been, and is still, in a lower state than those to the east; and it is this circumstance, in particular, which leads me to observe that it is most difficult to say whether the early Mexican nations came from a northern direction.

It was once thought that the existence of such ruins as those called the "Casas Grandes," in the extreme north of Mexico, afforded indications that that region had been a resting-place for the first populations coming south; however, I am led to believe that the "Casas Grandes" are of too recent a construction to favour this idea; and as to the peopling of Mexico, or the other portions of America, we have no data to go upon as to how population got there or at what period, even if we embrace the monogenistic view. With the polygenistic idea we suppose that the Red man is a separate creation; and all that we find in regard to him, including his astronomical and other forms of intelligence, tends to such an idea.

The peculiar civilisation Cortez found, on his landing in Mexico, is known as the Aztec, which had descended from older nations; the Toltec, or that of the architects or builders, has been well recognised; but this Toltec had its ancient foundations.

Writers on astronomy are agreed that the heavenly bodies claimed very early the attention of man. The first periods were counted by seasons, then by suns or days, by moons or months; after which the apparent annual revolution of the sun gave the idea of a year. The sun, possessing so benign an influence on animal and vegetable life, became the object of worship in the earliest periods with all nations.

United States.—Commencing in the United States, we find that the Natchez held fire to be an emblem of divinity, and the sun was their principal deity. To that great orb they addressed their invocations for success in all the pursuits of life, in peace and in war. The chiefs were called Suns, and their ruler was denominated the Great Sun; these were supposed to be under

the especial guidance of the Great Spirit. In the principal temple, a perpetual fire was kept burning by the ministering priest, who likewise offered sacrifices of the first-fruits of the chase.

The sun and some of the groups of stars were to them evidences of divine pleasure; the darkness of night, seasons of suffering, and the destruction of things by the course of nature, were signs of the Great Spirit's displeasure.

The Natchez divided their year into months or moons, thirteen of which appear to have made up the annual cycle. These months derived their names from the fruits which were then in season, or from the animals usually hunted at those periods. Du Pratz says their year commenced with the month of March, as this month manifests the return of spring. At every new moon they celebrated a festival, significant of the fruit or grain in season, or the animal which it was usual to see or hunt at such times. The seventh, or maize-moon month, was the prime festival at which the Great Sun, or King, presided in their capital.

The principal nation of Texas is still the wild Comanche; its Great Spirit, Moonch Tave; he has his habitation in the sun; he is immortal, and is the parent of the Comanche race. They calculate their time by moons, by the hot and cold, wet and dry seasons. At present Pachth is the name of their great council, held in September.

Pachth is September, the fourteenth month of the Aztec calendar. The occurrence here of the term Pachth leads me to think that the Comanches have obtained it from the Mexicans, rather than that the early Mexicans got it originally from the north.

It has been stated that the Northern Indians know the Pole-star, and direct their journeys by it. The six nations call the Pleiades the male and female dancers.

Humboldt (*Researches* i, p. 407) observes that the people of Nootka Sound have months of twenty days, fourteen of which counted a year, equal to 280 days; to which, by very complex methods, they add a great number of intercalary days. We may, however, say that the calendars of the rude North-

American tribes were of the most imperfect kind, being rather uncertain divisions of time.

In the practice of Astronomy, there must be instruments of some sort or other; the following is the only account of an astronomical instrument (if it be one) that has come to my knowledge in connexion with the United States. In "Observations on the Grave Creek Mound, in Western Virginia," by H. R. Schoolcraft (*Amer. Ethno. Soc. Trans.*, vol. i, p. 406), it is thus detailed:—"Antique Tube, or Syphon: Telescopic Device. In the course of excavations made in the easternmost of the three mounds of the Elizabeth-town group of mounds in 1842-3, several tubes of stone were disclosed, the precise object of which has been the subject of various opinions. The longest measured twelve inches, the shortest eight. Three of them were found, and carved out of steatite, being skilfully cut and polished. The diameter of the tube externally was one inch and four-tenths; the bore eight-tenths of an inch. This calibre was continued till within three-eighths of an inch of the sight end, when it diminishes to two-tenths. By placing the eye at the diminished point, the extraneous light is shut from the pupil, and distant objects are more clearly discerned. The degree of skill evinced in these objects is superior to that observed in the pipe carvings and other evidences of North-American sculpture. If this be the work of the ancient mound-builders, and intended for a telescopic-tube, it is a most interesting relic.

Mexico.—As already mentioned, we cannot say whence Mexico was peopled or at what time; however, there must have been a long period of man's infancy. We first hear historically of the Toltecs, and that they came upon the table-land of Mexico in the seventh century B.C., abandoning the same in the eleventh, and, in all probability, dispersing towards the south into Central America. The Chichimecs and Acolhuans or Tezcucans now come upon the scene, and then follow the Aztecs or Mexicans, who retreated from Tula in A.D. 1196, and settle in the city of Mexico in 1325. It is with the Aztecs and their neighbours we have now to do, and who, doubtless,

inherited the civilisation of the nations who had flourished thereabouts before them, and to which they may have made some additions.

The long period of time having passed for the formation of language, numeration commenced; and, according to Boturini, the ancient Mexicans had a sort of Quipu, composed of knotted coloured strings, for recording events, which was superseded by picture-writing. Up to the present time it has been positively asserted, that the aboriginal people of America had no alphabetic arrangement. If, however, reference be made to the recently discovered writings of Landa, second bishop of Merida in Yucatan in 1573, it will be seen that he gives an hieroglyphic alphabet of the Maya language, by which there is some hope of being enabled to read much of the picture-writing of Central America and Mexico. Subsequently came a system of notation, the first twenty numbers were expressed by a corresponding number of dots; twenty by a flag, and larger sums by twenties. The square of twenty, four hundred, by a plume; and so on to the cube of twenty, or eight thousand, denoted by a purse or sack.

There is much difficulty in making out the chronology of the Aztecs. It would appear that an epoch from which they reckoned corresponded with the year 1091 A.D., and it was the period of the reform of their calendar, soon after their migration from Aztlan.

Astrology.—They must first have observed the heavenly bodies as rude astronomers; then, as religion became a great portion of the government, the priests would turn certain celestial appearances to their advantage; and now astrology would flourish, which it did most triumphantly with its sanguinary rites in Mexico, under the later rulers in particular. They had also diviners, who foretold events by the appearances of the heart and entrails of a human victim. Tylor observes that astrological charts form a large portion of the Mexican picture-writings. The signs of the days and years were represented, for convenience sake, by different animals and objects. The signs remained after the history of their origin was lost; and then, what more natural than to imagine that the symbols

handed down by their ancestors had some mysterious meaning connected with the days and years they stood for; and then that a man's destiny had to do with the names of the signs that "prevailed at his birth."

With those of Mexico, the Spanish astrologer, Juan Millan, the adviser of Diego Velasquez, and who opposed Cortez's expedition to Mexico, and Botellas the Seer of Cortez, who was killed in the assault on the city of Mexico, may be well classed, with this difference, that the Spanish astrologers had not the sincerity of the Indian seers.

Thirteen was a mystic number. Their astrological year was divided into months of thirteen days, there were thirteen years in their indications, which contained each three hundred and sixty-five periods of thirteen days. B. de Bourbourg says, the number thirteen, which is found in all the astronomical tables of the nations of Mexico and Central America, is probably the result of their first combinations; it is possible that it owes its origin to the thirteen chiefs or deities who constituted society in early times, under Quetzalcohuatl and his companions. Also, before the correction of their calendar, they went by lunations or neomenies, to regulate the annual course of the sun, by giving twenty-six days (twice thirteen) to each lunation; this is a little less than the time the moon is seen above the horizon in each of its revolutions. This period was afterwards divided into other two parts, each of thirteen days; the first during which the moon is seen until it is full, the second, the thirteen days when the moon is decreasing, and until it is not seen.

Nine and four were mystic numbers. According to the Mexican astronomer Gama, because 360 can be divided by nine without a fraction; the nine "companions," not being attached to the five complimentary days.

Astronomy.—The Aztecs were acquainted with the cause of eclipses. Tylor states, that among the events recorded in the Le Tellier MS. are four eclipses of the sun, depicted as having happened in the years 1476, 1496 (a great eclipse), 1507, 1510. Gama, however, says that in 1476 there was no eclipse of the sun visible in Mexico, but there was a great one

on the 13th February, 1477, and another on the 24th May, 1481. It would be desirable to verify the years of the four eclipses with reference to their being visible in Mexico. "Though much is genuine," Tylor adds, "there is deliberate sophistication of a portion of this document." In 1426 "the earth was eclipsed."

They appear to have kept no account of the eclipses of the moon, and when they happened, they said that the sun ate the moon.

I only find one instance mentioned of "a very great comet, which they called Xihuitli;" this happened in 1489. It is stated that in 1509, a great light was seen in the night towards the east throughout all New Spain during forty days, extending from the earth to the sky. Could this have been a comet? or volcanic action in that direction? The Aztecs called comets, "citlalimpoca," or stars that smoke, and the common people exclaimed on seeing one, "there is our hunger."

Whether they had a regular system of constellations is uncertain; however, they regulated some of their festivals by the Pleiades. On the midnight before the new cycle (the last was the 21st to the 22nd March, 1507 A.D.), the priests took a victim to the summit of the pyramid of Tlaloc; he was stretched out on the fatal stone when it was known to be midnight by the conjunction of the Pleiades in the zenith, and was sacrificed. The Milky Way (Citallanotli) in its connexion with the sun in his four movements, under the name of Nahui—Ollin—Tonitiauh, also marked a solemn period. Mamalhoaztli, the stars called by the Spaniards the "Mastelejos," which are near the Cabrillas, in the sign of the Bull. Tonalatlecotle, the constellation attributed to this power created the world, said also to mean the Milky Way. The stars in the mouth of the Bocina (Ursa Minor) were the constellation Citlalxuneciulli, and they described it as composed of seven stars, like the letter S. Those stars, called the Carro (Ursa Major) they called the Scorpion, as being like that animal. The goddess Teoyaonuqui, or period of thirteen days—she is here painted naked—had a constellation dedicated to her, which presided over the fifteenth trecena. 1. The planet Venus, Citlapuli Veyestlalin,

or great star of the morning, sometimes called One Acatl, had a temple in the square of heaven. Boturini calls this the goddess of marriage (?) Venus is also called Tlavizcalpanleaitli, the god of morning and evening. The first light of the world, also Quezalcohuatl, the creator of the world; but this last is denominated as a separate planet under the names of—2. Tillacahuan and Tezcatlipoca. 3. Tlazolteoll, a planet, the goddess of love. 4. Tezauhteotl Huitzilopochtli, a planet. Yztlacolinhqui, or lord of sin or blindness; this was a southern star, and portentous of war. Teoiztactlachpanqui, one of the stars which influenced the thirteenth trecena. There were deities that presided over the twenty trecenas of thirteen days each=260 days of the priests.

The sun was called Tonatiuh, Tonal, sun or day. It was divided into four principal portions; the first commencing at sun-rise to mid-day, and so on, each of these into two parts. Gama remarks that the civil day was divided into sixteen parts, or eight for the day and eight for the night (see the sixteen divisions of the zodiac). The four first, from sun-rise to mid-day, it would appear, were shown by a gnomon on the zodiac, and the following four by another gnomon finished at evening. These were the hours used by the priests. The hours of the night were regulated by the stars. The annual feast of the sun was termed Naviolin; and when it was eclipsed they said, "It will give no more light."

The moon, or Metzli, was adored after the sun. There is a myth concerning the existence of Tochtli, a rabbit, in the moon, which animal plays a considerable part among their signs. In some parts of Mexico the moon was considered as a god.

In a group from the *Fejevary Codex* is represented the state in which they pourtrayed the phases of the moon, according to the Aztec mythology. We first see the sun and the moon quarrelling (fig. 77); the next group shows the defeats of the moon, which in the third group is swallowed by the sun; the fourth figure represents the triumphant sun; in the fifth, the conqueror spits the head of the moon out, as symbol of the first quarter.

The Cardinal Points. It is generally stated that the four large angular projections on the stone zodiac are intended for the sun's rays. They, however, appear to me rather to represent the four principal points of the compass. In the map of the city of Mexico, ordered to be made by Montezuma for Cortez, the square blocks of houses are east and west. (In Mayer's recent map of Mexico, the variation is 8° 20′ east), and I find them named and represented as under:—

East	- *Tlacopa*	represented by	a cane	-	*Acatl.*
West	- *Cioatlampa*	„	a house	-	*Calli.*
North	- *Mictlampa*	„	a flint	-	*Tepactli.*
South	- *Vitztlampa*	„	a rabbit	-	*Tochtli.*

Sahagun tells us that the Mexicans counted their years by a wheel (a calendar), which had four signs or figures which conformed to the four portions of the world, in the directions of east, west, north, and south.

Prescott gives a good *resumé* on the matter of time, which I here partly follow.

The Aztecs adjusted their civil year by the solar. They divided it into eighteen months of twenty days each. Five complementary (the nemotemi, or useless) days were added to make up the 365. A month was divided into four weeks of five days each. This arrangement, differing from that of the nations of the old continent, has the advantage of giving an equal number of days to each month, and of comprehending entire weeks without a fraction, both in months and the year. As the year is composed of nearly six hours more than 365 days, there still remained an excess, for which, like other nations who had formed a calendar, they provided by intercalation. They waited till the expiration of fifty-two vague years, when they interposed thirteen days, or rather twelve-and-a-half, this being the number that had fallen in arrear. This brought them, within an almost inappreciable fraction, to the exact length of the tropical year, as established by the most accurate observations. Gama has suggested that they had an intercalation of twenty-five days every one hundred and four years. If so, the length of the year, as known to them, differed but little more than two minutes from that of the true solar year. At the end of the

cycle of fifty-two years, they believed the world was in danger of destruction; but on the sun re-appearing, they commenced a new cycle. There were four signs in their cycle of fifty-two years, viz., Rabbit, Canes, Flint, and House; and against these signs they ranged the numbers one to thirteen four times, so that a cycle, Tylor observes, corresponds to a pack of cards, the four signs being the four suits, thirteen each. In some of their calendars there were four colours depicted.

In regard to their chronological system, the epoch from which they reckoned, as already mentioned, corresponded with the year 1091 of the Christian era, and was the period of the reform of their calendar, soon after their migration from Aztlan. There is still a difficulty in deciding on which day they commenced their year. Gama concluded that they began their new cycle on the 31st December O.S., equivalent to 9th January, N.S. B. de Bourbourg says that the Codex Chimalpopoca shows that the first day of the year II. Acatl, first of the new cycle, the year 1507 was between the day VIII. Acatl or the 22nd March, the commencement of the equinox. In a fragment of the Tarasca calendar (supposed to be similar to the Aztec), it is mentioned that the year began on the 22nd March.

Gama, who seems to be the most reliable authority on Mexican chronology, makes the Mexican first month and first day of the month to correspond with the 9th of January N.S.

Clavigero makes Gama's 9th of January correspond to the seventeenth Mexican month and the 12th of January; Sahagun on the 19th of December; Valdez the 26th of December; Gemelli 4th of February; Veytia 22nd of February.

Gama gives the 4th of January for the first Nemontemi, and the last on the 8th.

The Spaniards entered the city of Mexico the 8th of November, 1519, O.S., which was the year I. Acatl. The II. Acatl was 1507, therefore the preceding year, I. Tochtli, which was the first of the cycle, corresponded with 1506. According to Mexican computation, eight cycles (equal to 416 years) had elapsed since 1090, counting from I. Tochtli, the beginning of the cycle, or 1091.

The Tezcucans commenced their calendar in 1. Acatl, thirteen years after the Aztecs. The Tepanecs in 1. Calli, thirteen years before the Aztecs.

Gallatin observes on this subject:—"These three nations equally believed that the world would come to an end at the termination of their respective cycles. But that epoch, which was one of great anxiety, of their most solemn feasts and of prayers to their gods that they might be pleased to grant them another period of fifty-two years, was different for each of those three nations. This has all the appearance of a religious schism. The priests of Mexico must have considered the anxiety, the feasts and prayers, which the priests of Tezcuco addressed to the gods in the year 1. Acatl (1519) as an act of great folly, since the danger was then over, and the gods had granted them thirteen years before (year 1. Tochtli, or 1506) a respite of fifty-two years. And the priests of Tezcuco must have entertained a similar opinion respecting the time when those of Mexico celebrated their secular feasts. Whether this was considered an essential point of doctrine, and whether the priests of each place did respectively anathematise each other, we are not told. It does not appear that this dissidence had any effect on the political union of the nations; but it produced some difference in their respective calendars.

The Aztecs threw the years into great cycles of fifty-two each, which they called bundles, and represented by a quantity of reeds bound together. To enable them to specify any particular year, they divided the great cycle into four smaller cycles of thirteen years each. They adopted two periodical series of signs, one consisting of three numerical dots, up to thirteen, the other four hieroglyphics of years, as a rabbit, a reed, a flint, and a house; said by Veita as symbolical of the four elements. The same system was pursued through the four indications, which thus began with a different hieroglyphic of the year preceding; and in this way each of the hieroglyphics was made to combine successively with each of the numerical signs, but never twice with the same; since four and thirteen, the factors of fifty-two, and the number of years of the cycle, must admit of as many combinations

as are equal to their product. Thus every year had its appropriate symbol, by which it was at once recognised. And this symbol, preceded by the proper number of bundles, indicating the half-centuries, showed the precise time which had elapsed since the national epoch of 1091.

*Recent Examination of the Mexican Zodiac, or Calendar.**—Gama has written largely on the subject of the Mexican zodiac; and a good *resumé* of his researches is to be found in English by Gallatin. Taking Gama, Humboldt, and Gallatin as guides as far as they go, I now proceed to describe the large stone zodiac, from a recent photograph of the same; for all the drawings of the stone are more or less incorrect.

This interesting monument of Mexican antiquity was found, in 1790, buried under ground in the great square of the capital. It is carved from a mass of porous basalt, and is eleven feet eight inches in diameter, the depth of its circular ornamented edge being about seven and a half inches from the fractured square of rock out of which it was originally cut, and said to weigh twenty-four tons. It is thought that it formed part of the fixtures of the great temple. It is now walled into the north-west side of the cathedral.

This zodiac, according to Gama, was carved at Tenantitlan. It was taken to the city of Mexico, but on arriving at the quarter of Xoloc, it broke from its bearings, and was precipitated into the water, when the high priest and many others were drowned. On being got out of the water, it was transported to the temple of Huitzilopochtli, where preparations were made to inaugurate its celebration. It is reported that awful human sacrifices were consummated at this period, namely, the year VII. Tapactl, or 1512.

The photograph of the zodiac,† has a diameter of eleven

* In 1863, there was exhibited in London a good collection of "Works of Art in Ceramic Statuary," from Mexico, by native artists. In this collection there was the *Kellenda*, or Mexican Calendar, of small size, and just such a one as referred to by Tylor. The note in the catalogue runs thus:—"The *Kellenda* here represented with the most conscientious faithfulness (?), offers to the antiquarian an object of the most attractive interest." Tylor observes, "as to the wax models, the days are divided into sixteen instead of twenty parts, leaving out four symbols thought to be the ugliest."

† A photograph of the Aztec Zodiac, models of the same, drawings of various Calendars, and others plans and diagrams in connexion with this paper, will be deposited in the archives of the Anthropological Society.

and a half inches. On the top, to the right, is a projection of broken rock, and on the left nearly the whole of the side has similar projecting rock. The several rings are pretty circularly drawn, but not accurately, as if they had been done by compasses. The bottom, so called, ray, is not equidistant to the rays on either side of it. Is this a fault in the measurement, or does it mean anything?

All *drawings* of this zodiac are constructed as if the points were equidistant, when they are not so. The face in the centre is thought to represent the sun. There is a Toltec myth that Cipactli and Oxmoco invented this form of calendar. Imox (Oxmoco), the first sign of the calendars of Central America, is a symbol of the Nahuatl race, and identical with Cipactli, the first day of the month. The face is much disfigured; but on reference to Gama's drawing, in the forehead, are two circular bodies, having between them a carved figure with three small curves, the sign of II. Acatl (reed). From two circles, one inside the other, probably meant for ears, drop from each an oval, containing nine circles and ovals in three lines, and one each underneath, = 20, which is the number of days in the month. Underneath the chin and on each side of the elongated tongue is a circle between two ovals.

Within the next large circle are, first, four large parallelograms, supposed to be in allusion to the idea that the sun had died *four* times. The first to the right represents IV. Ocetotl (tiger), answering to 22nd of May, in the first year of the cycle; the second, IV. Atl (water); the third, IV. Quiahuitl (rain), 26th of July, in first cycle; the fourth, Ehecatl (wind); these are supposed to denote also the month of four weeks. The two lateral figures denote claws, which are symbolical of two Indian astrologers, man and wife, and were represented as eagles or owls. In each claw there are two circles, one inside the other; then each claw has three circular bodies, and underneath these five bent figures, and at the end of the line two dots. In the four spaces, on each side of the claws, are two circles within each other, said by Gama to be the symbols of the figures above and below.

The triangle on the top of the head indicates the first and

last day of the month. On the right is an oval symbol with a claw and one circle, which may be 1. Ehecatl (wind); on the left another symbol, may be 1. Tepactli (silex). Underneath the tongue are two squares, each containing four ovals and a circle in the centre, = 10, said to represent x. Ollin, or 22nd of September, in the first year of the cycle. Underneath these are five bent figures, and underneath again is a circular body, which may belong to x. Ollin; to its right two circles, a human head, and five circles, representing 11. Ozomatli (ape), 22nd June, in the twenty-sixth year of the cycle; to the left is a figure with a circle; it is called 1. Quiahuatl (ram), 22nd March, in the twenty-sixth year of the cycle.

All the circles, or dots, or round objects, are intended for digits, in connexion with the days, months, years, and cycles; when these can be better made out, much more will be learnt of this zodiac.

The next circle contains twenty divisions, representing, by their zodiacal signs, the twenty days of the month of that of the priests. It is read from the left, commencing with Cipactli, under the left point of the upper ray:—

1. *Cipactli*	- Sea animal.	11. *Ozomatli*	- Ape.
2. *Ehecatli*	- Wind.	12. *Malmalli*	- Twisted grass.
3. *Calli*	- House.	13. *Acatli*	- Reed.
4. *Cuetzpalin*	- Small lizard.	14. *Occolotl*	- Tiger.
5. *Cohuatl*	- Serpent.	15. *Quauhtl*	- Eagle.
6. *Miquiztli*	- Death.	16. *Cozcoquauhtli*	Bird (*Aura*).
7. *Mazatl*	- Deer.	17. *Ollin*	- Motion of the sun.
8. *Tochtli*	- Rabbit.	18. *Tecpatl*	- Silex.
9. *Atl*	- Water.	19. *Quiahhuitl*	- Ram.
10. *Itzcuntli*	- Dog.	20. *Xochitl*	- Flower.

Calli, *Tochtli*, *Acatl*, and *Tecpatl* would stand in the middle of each small period of five days; and there was a fair, or market-day, once in each of these small periods. A repetition of thirteen times the trecenas of the above four would be = to fifty-two, or the cycle.

Each of the eighteen months (not seen in this zodiac) had a certain name, from some natural object characteristic of the particular season which is indicated, or from some particular

festival or employment in which they were engaged at such times.

LIST OF THE MONTHS FROM CALENDAR, IN GEMELLI. HERE THEY GO FROM RIGHT TO LEFT.

1. *Tlacaxipehualiztli* (to glean), from the 9th to the 28th of January.
2. *Tozoztli* ( ), from the 29th of January to the 17th of February.
3. *Huetozoztli* (Trees begin to bud), from 18th of February to the 9th of March.
4. *Toxcatl* (Human victims flayed alive for their skins, which were tanned, to form the Priests' garments), from the 9th to the 26th of March.
5. *Etzalchualiztli* (Months of the Vigils of the Priests), from the 30th of March to the 18th of April.
6. *Tecuythuitl* (The Grand Vigil and Grand Penitence), from the 19th of April to the 8th of May.
7. *Hueytecuythuil* (Cords and garlands of maize tied round the necks of the idols), from the 9th to the 28th of May.
8. *Micay huitl* (From a food prepared of maize), from the 29th of May to the 17th of June.
9. *Huemicay huitl* (Festival of Young Warriors), from the 18th of June to the 7th of July.
10. *Ochpanitzli* (Festival of the Nobility of Old Warriors), from the 8th to the 27th of July.
11. *Pachtli* (Little Festival of the Dead and distribution of Flowers), from the 28th of July to the 16th of August.
12. *Hueypachtli* (Great Festival of the Dead. Fall of Fruit. Month in which fruit ripens. End of Summer), from the 17th of August to the 5th of September.
13. *Checiogli* (A broom. The cleansing of the canals, and repairing dykes and roads), from the 6th to the 25th of September.
14. *Pauchetzaliztli* (Name of a parasitic plant, or that it came from God), from the 26th of September to the 15th of October.
15. *Atemotzli* (Parasitic plant had arrived at a certain size. Festival of the rural divinities who presided over the mountains), from the 16th of October to the 4th of November.
16. *Titilt* (Month in which the divine flamingo arrived at the borders of the lake), from the 5th to the 24th of November.
17. *Yzcagli* (From the name of the standard of one of the principal gods, or of the god eaten by the faithful, under the form of maize kneaded with blood), from the 25th of November to the 14th of December.
18. *Atlacoalo* (The descent of water and of snow), from the 15th of December to the 3rd of January.

In Gemelli's Calendar, above the first month, is just between Tochtli and Calli, then follow Tepactl and Acatl, these four signs being repeated 13 times =52.

In the next circle of the zodiac are found the places of a certain number of squares. In the upper portion there are ten perfect ones on each side, each square containing four ovals and one circle, say = 100. In the lower portion there are eight perfect squares with 5=80; on each side the next square has three (and a large circle), and the next squares 2= say 10 (and a large circle), making in all, excepting the large circles, 190 indications. It has heretofore been *presumed*, that the four angular objects called sun's rays (but which, I suppose, may be rather intended for divisions of the circle or of their compass) covered twelve squares (but there is too much room for twelve squares, if so (?) then fifty-two small squares, each containing five circles, would give 260, and also *presumed* to represent 260 days, or the period of the twenty-first series of thirteen days; however, I only make 190 indications; thus the *presumed* 260 indications or days of the priests do not appear to me to be of much value. I may here observe that outside this system of 190 circles, there are 70 door-way looking figures. Now, if the 70 be added to 190 we get the number 260, which may be worth noting.

Out of the supposed signs of days spring the four large, said to be sun's rays, curved at the bases, the bottom ray having a circle at the ends of the curves. These rays run through from the circle of the twenty days to the inner edge of the outer great collection of similar symbols. These rays, I think, may rather represent the four cardinal points (for the Aztecs particularised them) than the sun's rays. There are four more angular bodies subdividing the curved ones, smaller and without curves; also four (somewhat like Tepactl Silex) other divisions, of a square form, making sixteen great divisions, which look as if they had to do with the division of the day.

Over the arrangement supposed to indicate days, Gama says, "the external zone consists, except at the extremities, of a symbol twenty times repeated, which may represent the Milky Way. The waving lines connected with it may be the representation of clouds." Others imagine them to be symbols of mountains, in which clouds and storms originate;

whilst Gallatin thought them to be altogether ornamental; which last, however, is not my opinion.

I will now examine this portion. Going from the interior of the zodiac there are, between the eight large and small rays, six sets of ten each, of door-way looking figures, something like Acatl (reed), and two sets of five, = 70 (this number 70 has already been alluded to). Out of the centres of the six sets (the other two but partially seen) rise figures, which Nebel styles "en forme de panache de plumes"—(Gama calls them "Rafagas ó luces," with which they adorned themselves. It is not clear to me what Rafagas means; it may, perhaps, signify brilliant plumes. A Rafaga is a gust of wind)—having squares with five indications each, =30; three door-way figures follow, = 18; and at their summit a large circle, and on each side of the figure in a band is a circle. On each side of the lower ray there is apparently an imperfect figure like the six, having a circle in lieu of the five dots, and seemingly the three door-way figures, the centre one covered by a circle. We may, perhaps, call these eight divisions, which, with the eight rays, would make sixteen, and may have to do with the sixteen divisions of time.

Above what I call the door-way figures are twelve series of a waved symbol, probably of clouds; suspended from each are four square points, supposed to be mountains, having underneath twelve open spaces =48. The whole figures look to me like the symbol *Atl*, water; or did the Aztecs suppose that the world as they knew it was surrounded by water? One of their expressions was "All the *round* (not a sphere) world is but a sepulchre."* Out of this circle, at the top, springs the symbol of the year, thirteen Acatl—reed (twenty-sixth year of the cycle); but in B. Mayer's drawing of the calendar, it is marked as twenty-two Acatl.

We now come to the symbol on the outer edge (the milky way of Gama), ten times repeated successively on each side, = 20. In the upper portions there is a band-like figure,

* Solis, in describing the great Teocalli of Mexico, and alluding to one of the principal idols, says, "it was seated in a chair (something like a throne) placed upon a blue globe, which they called heaven."

in four parts, which may be meant for reeds, and may have some reference to the tying the cycle of fifty-two years. In the upper portions also there are two more of these symbols, and in the lower two more, covered with serpent-like figures =24. The twenty symbols have each ten round dots on the inner side and top = 200; but the same symbols at the top have eighteen or twenty indications on two sides and the tops = 36 or 40. The two lower ones only show two dots each =4, which would make in all 240 or 244; if, however, the two lower symbols contained ten dots each as in the upper ones, then we should have the 260 corresponding to the number of days in the $20 \times 13 = 260$ days, the year of the priests.

Gama thinks this repeated symbol may represent clouds, but he says he has not observed clouds figured thus by the Indians. The symbol struck me as rather representing a plant or flower, as it did the first Spaniards, who called them "tufts of leaves;" and on pursuing the matter further, I find it to have much resemblance to the symbol of the twentieth, or last month, Xochtil, represented by a flower, or may be by plants or trees. Pointing to thirteen Acatl, at the summit, are two large angular figures (these Gama says are merely indications of thirteen Acatl; I think the collection of thirty lines, and five angular bodies in each, = 70, may belong to what I call sun's rays, and the whole of them may make 365, the days of the year), and at their bases is a line in each with apparently twelve little pillars = 24, supporting six circles each on their summits = 12. Can these mean the twelve solar months? In all this region, indeed all round what I will call here the flower symbol, there are series of small diagonal lines, which most probably represent the rays of the sun.

At the bottom of the calendar are two serpents or lizards-looking figures (behind the two human heads); these figures have claws. Gama can give no explanation of these rather prominent figures. In his drawing they have in all about eighty-six dots, and about 104 little lines, = 190. It is this 190 I make when I count the dots in the series of five. Gama calls the two large human heads Tohualteuhtli, the Lord of night (which is the same as the first in the list); and there are nine

of these lords, or companions of night, having the following names :—

1. *Xiuhteuctli; Tatl* - Lord of the year; Fire.
2. *Tecpatl* - Silex.
3. *Xochitl* - Flower.
4. *Cinteotl* - Goddess of Maize.
5. *Miquiztli* - Death.
6. *Atl* - Water; its symbol, the goddess Chalchiuheueye.
7. *Tlazolteotl* - Goddess of Love.
8. *Teplyolotli* - A Mountain Deity.
9. *Quiahuitl* - Rain; its symbol, the god Tlaloc.

In a narrow circle near the edge are sixty-three or sixty-four dots on each side, say = 128; may be 130; then double this, we should have the known number 260. Gama supposed there was another stone calendar for the other six months of the year, and that it looked to the north; however, this is questionable. Outside the above circle, and partly down the edge of the stone, are a series of oval indications, thirty-one or thirty-two on each side, and five on each side of thirteen Acatl = 72. (73 cycles of 260 days amount to the cycle of fifty-two years, these ovals may have to do with this period.)

The eight holes, said to be for the gnomons, are in the edge, "and vertical to the surface of the stone." As this is so, I should conclude that the stone, when in position, was laid flat, and not, as Gama supposed, upright.

Over the two heads (in Gallatin) are a series of twenty-four and twenty-six dots =45 (twice 45=90 by 4=360) the days of the year; but this is not to be depended on. I make out some 180 dots; this doubled would give 360, the year, without the five intercalary days.

Gama observes, we have delineated on this stone the dates of the five principal positions of the sun, from the vernal to the autumnal equinox. Three of these, the two transits of the sun by the zenith (22nd of May and 26th of July), and the autumnal equinox (22nd of September), are the Mexican days on which these phenomena occurred in the first year of the cycle (one Tochtli); and the two others, the vernal equinox (22nd of March) and the summer solstice (22nd of June), are the Mexican days on which these two phenomena occurred

in the year 13 Acatl. These dates are not founded on conjectures. They are positive facts, engraved by the Indian priests, before the conquest, on a stone of indubitable authenticity.

Gama tells us that this stone (the zodiac) is a true meridianal clock, by means of which the Mexicans knew the eight intervals of the artificial day; four for the morning and four for the evening, from the rising to the setting of the sun, as shown by the shadows of the eight gnomons fixed in the holes seen in its circumference. Gama does not say positively that the Mexicans resorted to the method of gnomons; but by whatever method they followed (most probably by observation), they arrived at the same result.

I have calculated that the two upper styles, or gnomons, for the stone zodiac, would be about sixteen inches in length. The two lower would be in conformity with the zenith of Mexico to the tropic of Cancer. The four central ones, I suppose, were of a convenient length, and they showed the sun's position at mid-day, and when passing Mexico to south or north, the shadows would be just below the line.

Account of some of the Mexican Zodiacs.—In the second lot of presents sent by Montezuma to Cortez, whilst he was still on the coast, and which excited most admiration, were two circular plates of gold and silver, as large as carriage wheels. One representing the sun, was richly carved with plants and animals, no doubt denoting the Aztec century. It was thirty palms in circumference, and was valued at 20,000 pesos of gold. (The pesos of gold may have been worth £2 : 12 : 6.) It weighed 3,800 ounces, =271 lbs. 6 oz. Prescott says *carved;* Solis says in *relief.* If of such a weight it might have been cast, for the Mexicans understood this art well. As numbers of gold and silver calendars would be required for the court and chiefs, I think it probable that some at least would be cast. I do not know of the existence in our day of *one* specimen. Tylor exclaims, "Where are the calendars of solid gold and silver, as big as great wheels, and covered with hieroglyphics? Benvenuto Cellini saw some of these things, and was filled with admiration. They have all gone into the melting pot centuries ago."

The silver wheel of the same size, on which was figured the moon, weighed 50 marks, or over 50 lbs. weight.

In the first inventory of objects Cortez sent to Spain, a large wheel of silver, weighing 40 marks, = 380 ounces, and several others of the same metal, are specified. Also a large wheel of gold with figures and strange animals on it, and worked with *tufts of leaves*, weighing 3,800 ounces, value say £15,200.

At Tlascala, among other presents from Montezuma to Cortez, the ambassadors were charged as usual with a costly donation of embossed gold plates (zodiacs).

In a pond in Guatemozin's garden, the soldiers of Cortez found a sun, as it was called; this was one of the Aztec calendar-wheels, of pure gold, of great size and thickness.

In Clavigero will be found the following drawings of calendars: that of the months; of the year of twenty months, with a sun and new moon in the centre; the Mexican century, with a large sun in the centre, encircled by a serpent, with the repetition of house, silex, cane, and rabbit; and dots for numbers.

Veytia gives seven forms of calendars. In vol. iv of Lord Kingsborough's work is a fine engraving of a calendar. The following regarding it I translate from the Spanish. "In the collection made by Boturini were found four wheels or calendars, as the present one, although with different notes and hieroglyphics, by which the Indians were governed and made the computations of the months, years, and centuries, as well as the four quarters (of the year), and the moon's course; and by order of the Royal Council in 1745, there was made by the Interpreter-General the explanation of these four, as well as of the maps and the rest of the characters (painted books) which had been learnt, and these were sent to the king deciphered, in a *resumé*. This same wheel *estampoda*—stamped—with others of the Indians of this same kingdom, and are found in Gemelli's sixth volume, *Giro del Mundo*."

The outside circle contains the fifty-two years of the cycle; the next circle, the names; then the eighteen symbols of the months; then the phases of the moon; and in the centre four symbols.

In *Torn Leaves from the Chronicles of the Ancient Nations of America*, by Tito Visino (Trübner, 1864), are the following photographs from drawings of zodiacs. Plate 34. Stone zodiac of the Aztecs. 35. Cycle of fifty-two years. 36. Aztec year of eighteen months. 37. Aztec month. 38. The four last months of the Aztec year. 39. The Toltec cycle.

Instruments. Prescott observes, of the many perplexing points of Mexican history, particularly as regards their astronomy, the subject of astronomical instruments is the most enveloped in obscurity. The only real instrument we know of is the dial, or zodiac, and the presumed arrangement on it for gnomons. However, there is the supposed meridian line of Chapultepec. It was discovered in 1775 by Dr. J. E. Santilezes, and Gama thus describes it:—"On a large stone, in horizontal plane, there were three arrows cut in relief, one over the other, which in the centre made equal angles. The points of the three arrows looked to the east; where they showed, those of the two sides were the two solstitial points, that in the centre being the equinoxial. In the common concourse of the three there was also engraved a species of band, which bound them; and this had in its centre a small line, which I did not at first see, or that it signified anything, until I was shown two other stones which were at the side of the horizontal plane; one was perfect, and the other broken; the perfect one, which was in the south, had a bore somewhat deep in the upper portion, the diameter of which was less than that of an *arbejon* (a vetch). The broken stone, which looked towards the north, had lost the bored portion; but in one part there was still seen some of its furrow. Having examined this, I found that it corresponded to the stone which was in front, and that they were exactly north and south; from which I inferred, that in them was fixed a cord which served for a meridian, because it came to rest upon the line in the centre of the band which bound the arrows, and that in this line should come the shadow of the cord at the moment of mid-day. In fact, in these stones, the Mexicans had an instrument, by means of which they knew the true east and the west, and exact time, by the rising and setting of the sun at the period of the equinoxes and

solstices, consequently the four seasons of the year, and at the same time, the true mid-day during the year.

"When I returned to examine these stones, I found them broken up and used in the construction of a furnace at the foot of the hill. How many precious monuments of antiquity (for want of intelligence) have perished in this manner!"

Chapultepec means the hill of the grasshoppers. Here were the "beautiful groves" of the Montezumas, where doubtless there was a palace, and where the Aztec rulers had all the means within their reach for making celestial observations. Further on I notice a similar retreat of the kings of Tezcuco at Tescocingo. We know that a stone zodiac, cut in the rock, existed there; and from ruins that still remain, there is reason to believe there may have been a meridian instrument also; indeed, old Spanish writers tell us that Nezhahualpilli, the king of Tezcuco, had his astronomical observatory.

Brantz Mayer alludes to the pyramid of Xochicalco,—hill of flowers—which is eighteen miles south of Cuernavaca, in the state of Mexico. It appears to have been composed of five stories. It was in exact correspondence with the cardinal points. It would seem that the hill (on which the pyramid stood) was partly hollowed by chambers. A party, under the orders of the government, explored these subterranean retreats, and, after groping through dark and narrow passages, the side walls of which are covered with a hard and glistening cement, they came to three entrances, between two enormous pillars cut from the rock of which the hill is formed. Through these portals they entered a chamber; the roof was a cupola of regular slope, built of stones placed in circles, while at the top of the dome was an aperture, which probably led to the surface of the earth or the summit of the pyramid. Nebel, who visited these ruins a few years ago, relates an Indian tradition, that this aperture ascended immediately above an altar placed in this chamber, and the sun's rays fell directly on the centre of the shrine, when that luminary was vertical.

We are not informed by writers as to the ideas of the Aztecs of the form of the world, whether an extended plane, cylindrical, spherical, or a circular plane; however, the latter appears to me to have been the most likely.

Although the Aztecs had tubes for holding their segars, made of tortoise-shell; for blowing a fire to increase the heat; the long *sarbacane*, or blow-pipe, for pellets, used in the chase; the *vocina* was a sort of trumpet used by the priests for calling out the hours of the night. In the Mendoza collection a priest is represented observing the stars, by a dotted line going from his eye to the observed star; no mention is made of the employment of tubes for observation of the celestial bodies.

In Prescott is the following. "It can hardly be doubted," says Lord Kingsborough (vol. vi, pl. 15), "that the Mexicans were acquainted with many scientific instruments of strange invention as compared with our own: whether the *telescope* may not have been of this number is uncertain; but the thirteenth plate of Dupaix's *Monuments*, part ii, which represents a man holding something of a similar nature to the eye, affords reason to suppose, that they knew how to improve powers of vision." Prescott observes "that the instrument alluded to is rudely carved on a conical rock. It is raised no higher than the neck of the person who holds it, and looks as much like a musket as a telescope; though I shall not infer the use of fire-arms among the Aztecs from this circumstance."

On reference to the drawing, which is to scale, I find the rock in question to be about five yards in height, and four and a half in its greatest width. The figure of the man is boldly delineated, holding the object diagonally in a line from the mouth; the form of the object is like an old-fashioned handle of a knife, carved at the end and three-quarters of a yard in length. On reference to Aztec symbols, this is the form seen when any one is supposed to be speaking, and appears to me that the figure may be that of a priest in the act of invoking some deity; were the symbol open at the farther end it might be meant for a *vocina* or trumpet. In vol. iv of Lord Kingsborough's work, there is a drawing representing something like a cistern; on it is the figure of a man with a similarly formed object, but here it is in his hand, and looks as if intended for a club.

Referring again to Dupaix's drawing: in front of the man

there is the figure of a rabbit and eight dots, which may either stand for the eighth day, Tochtli (rabbit), or eighth Tochtli in the second *trecena* of the cycle of fifty-two years. Just behind the man, in a double square, is a circle with three rays or points at the top, and surrounded by nine circles or dots; underneath it is a circle with five points, and between them six circles. On the lower edge of the stone seven indistinct symbols, between two rows of dots, which, doubtless, told the story of the doings of the man.

B. de Bourbourg, in his *Popol Vuh*, alludes to the Nahuatl myth of Tetzcatlipoca or the smoking mirror, and is one of the names of the Creator. With this name he is the smoking mirror, *lançant le foudre*, and often appears with great spectacles (without glasses) before his eyes. Sometimes this is called *Tonatiuh* or the sun. The frontispiece to *Popol Vuh* is a drawing of this object, and at p. 367 is a description of the ancient vase found in the State of Oaxaca, which appears to be of Zapotec origin, and in all probability belongs to Tetzcatlipoca, and the spectacles placed before his eyes "may be the symbol of his providence."

I may observe that nothing is said as to the invention of glass in the New World before the Spanish Conquest, although it is mentioned that the Aztecs knew the art of enamelling; or that discs of rock crystal were placed in these so-called spectacles.

I will conclude the section on Mexico with a few words relative to Tezcuco, where there is something preserved of say Toltec civilisation. Their calendar is sometimes called the "Toltec;" a description of one is given in the *Rambler in Mexico*, p. 186, in these words:—"The rock (at Tezcosmgo is three miles east of Tezcuco) had been wrought by hand into a flat surface. In this perpendicular wall of rock, a carved Toltec calendar existed formerly; but the Indians finding the place visited by foreigners, took it into their heads that there must be a silver vein there; and straightway set to work to find it, obliterating the sculpture, and driving a level beyond it for several yards." (Tylor mentions that a specimen of their calendar is to be seen built in the wall of a church at Tezcuco.)

At p. 187 :—" The so-called Montezuma's baths are composed of two singular basins, of two and a half feet in diameter, cut into a bastion-like solid rock, projecting from the general outline of the hill, and surrounded by carved seats and grooves, as we supposed; for I own the whole locality was inexplicable to me. I have a suspicion, that many of the horizontal planes and grooves were contrivances to aid their astronomical observations, like those discovered by Gama at Chapultepec." Old Bernadino Sahagan observes :—" They say Nazahualpilli was a great astrologer. I have seen a place on the outside of his palace, enclosed within four walls, only a yard in height, and just of sufficient breadth for a man to lie down in; in each angle was a hole, in which was placed a lance, upon which hung a sphere; and on my inquiry as to the use of this square place, a grandson of his replied, that it was for the king when he went by night, attended by his astrologer, to contemplate the heavens and the stars. And I think the reason why these walls were elevated a yard above the terrace and a sphere of cotton or silk being hung from the lavers, was for the sake of measuring more exactly the celestial motions."

Central America.—Although Yucatan at present belongs politically to Mexico, still, as it is rather connected with Central America in the divisions of the subjects under consideration, I commence with Yucatan in what I have to say on the astronomy of Central America.

Our knowledge of the Yucatan calendar is derived from J. P. Perez's communication to Mr. Stephens. It is substantially the same with that of the Mexicans, though differing in some particulars.

The inhabitants of Yucatan had, like the Mexicans, the two distinct modes of computing time: by months of twenty days, and by periods of thirteen days. They also distinguished the days of the year by a combination of those two series precisely similar to that of the Mexicans; and their year likewise consisted of 365 days, viz., of eighteen months of twenty days each, to which they added five supplementary days; also of a corresponding series of twenty-eight periods of thirteen days each, and one day over. A table is given of the names of the

twenty days of the Yucatan month, with their signification, as far as it has been ascertained by Perez; also the days of the Chiapa, Mechoacan, Nicaragua, and Mexican months, which, from the similarity of the names of several of the days, appear to have been in its origin nearly identical with that of Yucatan.

The calendar of the kingdom of Mechoacan, where the Tarasca was spoken, appears to have been similar to that of the Mexicans, as the names are given by Veytia; the names of the days of an ancient Mexican, or rather Toltec tribe, found in Nicaragua, are given. This, as far as we know, is the extreme south-east limit of the Mexican calendar on the Pacific Ocean. The limits on the Atlantic, or Gulf of Mexico, may be traced as far as the islands opposite Cape Honduras; beyond which, the shores are still inhabited by the wild Mosquito Indians.

The cycle of fifty-two years was also adopted in Yucatan, and the arrangement of the years was precisely the same as in that of Mexico, substituting only the names Khan, Muluc, Hix, and Ca-uac, for Tochtli, Acatl, Tecpatl, and Calli.

The Chiapan cycle is also similar, substituting for the names Khan, Muluc, Hix, Ca-uac, those of Votan, Lembat, Be-en, Chinax. But there was an essential difference respecting the series of names and the numerical character of the days, as appears by the table, which shows the termination of the first year of the cycle, and the beginning of the next ensuing years.

Perez states that the fundamental rule is never to interrupt either of the series of names or of days. Thus, inasmuch as the last supplementary day of the first year of the cycle (one Khan) is one Lamat; and, as in the order of the days of the month, the day called Muluc immediately follows the day Lamat; the ensuing year, two Muluc, commences with the day two Muluc, in the same manner as the year one Khan commences with the day one Khan. It is the same with the other years; so that the first day of every year has the same name and numerical character as the year itself.

Perez thinks that they must have had the intercalation, either of one day every four years, or of thirteen days at the end of a cycle.

The Yucatecos differed from the Mexicans with regard to

the time of the solar year, when their year began. Perez says that the first day of the Yucatan year corresponded with the 16th of July; and that this was the day of the transit of the sun by the zenith of a place which he does not mention (probably Mayapan); but he adds that, for want of proper instruments, the Indians had made a mistake of forty-eight hours. If the Yucatan year began on the zenith day, this renders it highly probable that the calendar was like that of the Mexicans, corrected by an intercalation of thirteen days at the end of a cycle.

The names of the months of the Yucatecos, with Perez' interpretations and their correspondence with our year, new style, appear in the following table:—

TABLE OF YUCATESE MONTHS.

1. *Pop, Poop*	- Mat of Reeds	-	begins 16 July, N. S.
2. *Uo*	- Frog	-	„ 5 August.
3. *Zip*	- Tree	-	„ 25 „
4. *Zodz*	- Bat	-	„ 14 September.
5. *Zec*	-	-	„ 4 October.
6. *Xul*	- End	-	„ 24 „
7. *Dzeyaxkin*	- Summer	-	„ 13 November.
8. *Mol*	- To unite	-	„ 3 December.
9. *Chen*	- A well	-	„ 23 „
10. *Yax*	- First	-	„ 12 January.
11. *Zac*	- White	-	„ 1 February.
12. *Quej*	- Deer	-	„ 21 „
13. *Mac*	- Lid, cover	-	„ 13 March.
14. *Kankin*	- Yellow sun	-	„ 2 April.
15. *Moan*	-	-	„ 22 „
16. *Pax*	- Musical instrument		„ 12 May.
17. *Kyab*	- Song	-	„ 1 June.
18. *Cumku*	- Noise	-	„ 21 June.

Uayebhaat } Bed of Year { the five supplementary days
Xina Kaba Kit } Days without name { from the 11th to the 15th July.

The Yucateos, besides their cycle of fifty-two years, had another, containing thirteen periods, or twenty-four years, each, = 312. These last-mentioned periods were called Ajau, Ahau, or Century.

Bishop Landa says, not only did they take account of the year and months, but they had a mode of counting time by

ages, which they did every twenty years, counting thirteen twenties with one of the twenty letters or symbols of the months, which they called Ahau, without order, and only changing them. They called these Katunes or centuries, and that the devil must have invented this sort of calculation. In the centre of this form of calendar was written, "This is called Uazlazon Katun, which means, the war, or game of the Katunes or centuries."

From this Katun, which is a circular calendar, I copy them as they stand with their numbers, commencing at the top and going to the right:—11. Buluc Ahau; 9. Bolon A; 7. Vuc A; 5. Ho A; 3. Ox A; 1. Hun A; 12. Lahca A; 10. Lahun A; 8. Vaxac A; 9. Vac A; 4. Can A; 2. Ca A; 13. Oxlahun A.

Landa has preserved the symbols or rather hieroglyphics of the eighteen months of twenty days each of the Yucateco year, and gives the names of the five supplementary days, Kan, Chiccan, Cimij, Manik, and Lamat.

He also gives the symbols or hieroglyphs of the twenty days of the month: Kan, Chicchan, Cimi, Manik, Lamat, Muluc, Oc, Chuen, Eb, Ben, Iz, Men, Cib, Caban, Eznab, Cauac, Ahau, Ymix, Ik, Akbal.

Further on I shall allude to the Maya or Yucateco alphabet, by which I hope at some future time to give the meaning of the days of the month, and some other portions of Maya history.

B. de Bourbourg gives the following description of a Yucatan calendar. In the centre was the image of the sun. The circle was divided into eighteen parts for the months, with the respective symbols, also the cycle of fifty-two years. Round the image was seen a serpent making four coils round itself, one on each division of the circle, the mouth receiving the tail in the last inflexion. The circle was divided into four weeks of years, thirteen in each, at the head of which were placed the signs of the initial days of the years.

The east was called Kan; west, Hix; north, Muluc; and south, Canac.

B. de Bourbourg, in his *Popol Vuh*, informs us that Colhuacan was probably the capital of the ancient king, Xibalba,

identified with Na-chan. Chan is synonymous with Colhua, and Chanes means serpents. The neighbouring Sacandones were of Palenque. These people appear to have been attacked by the Mexican Nahuas, who came from the north and founded Tlapallan or Xibalba, and were for a long period feudatory of the Quinanes, Chanes, or Colhuas. Now we hear of the correction of the calendar, which Boturini calls luni-solar, and that the year of 365 days had an excess of nearly six hours; they assembled in the city of Auehue-Tlapallan and adjusted the years to the equinox of spring, which may have been a little before the Christian era.

Veytia, who follows Ixtlilxoclitl, observes this was an assembly of learned men called to deliberate upon a change; but the tradition preserved by Sahagun gives it another character, that of introducing a new form of government; when the Nahua chiefs met secretly to deliberate as to the interests of the nation, after the prince they had brought in with them had separated from them. Then there only remained with the nation four wise people Oxomoc (means a pregnant gormandizing woman), Cipactonal (he who is superior to the sun), Tlaltetecum (fire that makes the world resound), and Xuchicaoaca (flower); and they said, "the time will come when there shall be light." It may be in allusion to the epoch when the Nahuas could publicly establish their calendar, or, as they said, to put the sun, moon, and stars in motion—that is to say, to organise according to their views, government, society, religion, etc.; but they said, "as long as our god is absent, by what means shall we do this? What order shall things be in, seeing that the wise men have taken away the pictures by means of which they governed." So they invented judicial astrology and the art of interpreting dreams; they arranged the order of days, nights, hours, and differences of seasons, which they guarded, even when the princes of the Toltecs, the Mexican, Tepanec, and Chichemec governed them.

Here then appears to be the origin of the Toltec or Mexican calendar, which was a perpetual and infallible system; eighteen months of twenty days each, =72 weeks of five days; then a seventy-third week completed the year. This went on for

fifty-two years, when thirteen days were intercalated, which supplied the place of bissextile years.

Not content with regulating their civil calendar, or *Tonalpohualli*, these wise people of the Nahuas made it coincide with another calendar,—the *Metzlapohualli*, or ritual for sacred purposes, in which they counted half-moons of thirteen days. Twenty-eight thirties made too short a year, but at the end of thirteen years they added half a lunation more, making it equal to 365 days, so that the civil and religious year began on the same day. At the end of the cycle of fifty-two years, a fresh thirteenth (the 461st) was equal to the intercalary days of the civil calendar. This period of fifty-two years, two of which formed an age—*Mehuetilizili*—of one hundred and four years, served as a base for Mexican chronology.

The Toltecs had four calendars: one for agriculture, chronology, ritual of the priests, and the astronomical, so as to know the sun's course, and situation of the planets.*

Early in the history of Guatemala, when the apotheosis of Aunhun-Apu was that of four hundred young men killed by Zipaacna (symbol of giants of the New World), they were symbolised by the Pleiades. This new era of mankind, on account of this circumstance, is called Nahua-Ollin-Tonatiuh, or sun of the fourth period (*Popol Vuh*, p. cxlv.)

Akbal (the *marmite*, or cooking-utensil, in Quichée) is the twentieth sign in one of the old calendars of Central America. Tylor, in his late work on Mexico, thinks that the civilisation of Mexico and Central America were independent of each other (in which I fully concur), but that later they came in contact. (But whence came they, and what is this history of this most strange civilisation, multitudes of wondrous architectural remains, traditions, etc. ?) The later Central American calendars may assimilate to the Mexican; but in all probability these earlier ones are of their own invention.

If we refer to Juarros, he says, "Whilst Mexico was going through the phases of its early history, Guatemala was doing the same under powerful chiefs, who were great builders in

* See "Codex Chimalpopoca MSS. of the Cakichiquel" and *Popol Vuh*; the *Tun* of B. de Bourbourg.

stone and of a peculiar ornamentation. In 1524, when Alvarado conquered the country, there were more than thirty different nations in it. He also calls the Quichées Tultecas, which means builders. Also that Acxopel, the Tultec, was the founder of the Quichée monarchy. When the Tultecs came to Guatemala, they found it peopled by many different nations.

At Uxmal, on the terrace of the house of the tortoise, there is a quadrangular enclosure, and within it is a round stone of rude and irregular appearance, eight feet high, and five feet in diameter, which has obtained from the Indians the name of Picote, or whipping-post. Similar stones in similar positions occur in many of the ruined cities, and have therefore probably been connected with some national custom or religious rite.

Was this the place of sacrifice, say of a Gucsa, as among the Chibchas of Bogotá? Or could it have been a gnomon?

A few weeks since, the indefatigable Abbé B. de Bourbourg issued his *Relacion de las Cosas de Yucatan* of Diego de Landa, containing the signs of the calendar and the hieroglyphic alphabet of the Maya language, etc. (*Trübner.*)

Landa was a Spaniard, born in 1524, and became the second bishop of Merida (Yucatan) in 1573. Although another Vandal, like Zumarraga, destroying idols and burning the picture-writing of the natives, he collected the traditions of the people, wrote portions of their history, but above all he has given the characters of the Maya alphabet. This is an important key to further knowledge of Central American and Mexican history. Landa says, "They had certain characters or letters by which they wrote in books, ancient histories and their sciences, which they well knew and taught. We burnt these, at which they were very much grieved."

This is the first indication of a native alphabetic arrangement of the ancient people of the new world, the details of which will shortly be laid before the Anthropological Society.

The chronological monuments of Mayapan and Zilan, some of which are eighteen feet in height; the monoliths of Copan and Quiroga are of similar character; and it would seem that a fresh stone was put up in some localities every twenty years.

Now that we have this alphabet, we may be enabled to read much that is engraven on these monuments.

The Mayas knew the planet Venus and the constellations called by the Spaniards the Cabrillas and the Artilejos.

New Granada.* Chiriqui.—This region rather belongs to the southern portion of Central America than to New Granada, to which latter it is now politically attached.

At p. 30 of my work on "South American Antiquities, etc.," I give a plate of the Piedra Pintal, or carved rock of granite, representing *suns*, heads, lizards, circular, oval, and other figures.

Recently have been discovered in this region large collections of graves, the bodies long since mouldered to dust; but interesting pottery (specimens of which I have deposited in the British Museum), large quantities of gold objects of men, women, deities, birds, beasts, celts, etc., have been extracted. It is most probable that the sculptors of the Piedra Pintal were of Central American origin; and the makers of the pottery and gold figures were their descendants; some of them were known in after times as Dorachos.

Doubtless these people were sun-worshippers, but we know little or nothing about them. Indeed this region, and perhaps the whole of the Isthmus of Darien, may be looked upon as dividing the civilization of Mexico and Central America from that of the Chibchas of Bogotá.

The portion of this extensive region, to occupy most of our attention, are the table lands of Bogotá, inhabited, at the time of the Spanish Conquest, by a nation called by the Spaniards Chibchas and Muiscas. Their principal city, now Bogotá, was Theusaquillo. The Chibcha territory seems to have extended from 4° N. to 6° N.; was in length forty-five leagues, from twelve to fifteen leagues in width, and was surrounded by other independent nations.

I may mention that a much more ancient race had flourished

* See, for some other details, my *Antiquarian, Ethnological,* and other *Researches in New Granada, Ecuador, Peru, and Chile, with Observations on the Pre-Incarial, Incarial, and Monuments of other Peruvian Nations,* with plates, London, 1860.—*Trübner.*

to the south of the modern Chibchas at Timaná; these I have called Pre-Chibcha.

The Chibcha country was governed by two supreme chiefs; one, the zipa, who had his court at Bogotá; the other the zaque, a sort of pontiff, who lived at Tunja.

In their early traditions they call Chiminiguagua the creator of the world, and that the sun and moon were his companions. Then Bachue, a beautiful woman, came out of a lake with a boy, who became her husband, and from these the world was peopled.

The Supreme Power now obtains other names, as Ullco and Chibia; the sun or day is called Sua; the moon Chia, or night; these, with Cuchivira the rainbow, are adored.

Chibchacum for a time is their great divinity, but displeases a superior one, namely, Bochica, who obliges him to bear the burthen of the earth, which was previously supported by pillars of wood; this measure brought about its inconveniences, such as earthquakes, caused by Chibchacum, tired of being in one position, and shifting the weight of earth from one shoulder to the other, and, according to the care with which he does this so is the intensity of the earthquake.*

Their priests resided near their temples (some of which were of stone) and superintended the "Cuca," or college, where those who dedicated themselves to the priesthood were taught, among other things, the computation of time, the traditions of which were preserved by the priests, who were the depositories of all the abstract knowledge, which was lost immediately after the conquest of the country by the Spaniards.

The Sun was the only deity to which they offered human sacrifices, sprinkling with their blood the stones on which the first rays shone. The feast to it was in December, and called Huan. The sacrifices, the processions, and solemn dances the Chibchas performed on the sunas, or paths, from the door of the habitation of the chief to some particular spot, generally

* B. de Bourbourg's *History of Mexico*, iii, p. 482. The early nations of Mexico and Central America believed that earthquakes were caused by the divinities who supported the earth, moving it from one shoulder to the other in order to rest themselves.

some neighbouring ridge or height; and lastly, the care with which the Guesa was educated: a victim whose heart was torn from his body (a fresh Guesa was sacrificed every fifteen years); all had a direct and symbolic relation with the division of time, the calendar, and the curious intercalations, so as to assimilate with the course of the heavenly bodies the times of sowing and harvest. The sanguinary and dramatic character of the sacrifices was calculated to call the attention of the people in such a way that they should not forget what so much interested them to know, and has been said to be a substitute for the quipus of the Peruvians. They were essentially an agricultural people, to whom the frog or toad, as an emblem of humidity, served as a principal base for their system of numeration and of their calendar.

The Chibcha or Muisca Calendar.—Before entering into a description of one of the most interesting remains of American antiquity, I will say a few words about the individual who rescued from oblivion all he possibly could with regard to it. His name was Duquesne, born in New Granada, and descended from a French family, settled in Spain. He became the Cura of Gachancipá; he collected the traditions of the country, and succeeded in procuring one of the sculptured calendar stones, by which the Chibcha priests regulated the division of time. The Cura found a small number of Indians who knew something about the management of this calendar. He communicated his memoir on the subject to the Spanish botanist Mutis, who handed the MSS. to Humboldt, in 1801, and who has gone into detail in the matter.

The following *resumé* I have translated from J. Acosta's most valuable *Compendio de la N. Granada;* however, a larger portion will be found in my *South American Antiquities.*

Account of the Muisca Calendar of the Indians of New Granada, dedicated in 1795, *to Don José Celestino de Mutis, by Don José Domingo Duquesne, Cura of Gachancipá.*

The Muizcas counted with their fingers. They only had names for numbers up to 10, and the number 20;* viz., 1,

* Acosta says that from 1 to 20 are the only hieroglyphics he has found of the Muizcas.

ata; 2, bosa; 3, mica; 4, muyhica; 5, hisca; 6, ta; 7, cuhupcua; 8, sahuza; 9, aca; 10, ubchihica; 20, gueta, concluding these, they turned their hands, went to their feet, repeating the same words, putting before them the word quihicha, as, thus says the foot; quihicha ata, 11; quihicha bosa, 12; etc. The number 20, or gueta (house, or the time of sowing), ended their numbers. Having finished with one 20, they commenced counting another 20, uniting it to the first, until 20 twenties were obtained. They divided their accounts into four parts, and again subdivided each into fives: thus their prime numbers were 5, 10, 15, and 20, which served them in the arrangement of their affairs.

The moon (the origin of their imperfect calendar) was an object of their observation and religion, giving to them the idea or model for the form of their habitations, enclosures, temples, fields, in a word, was connected with all their doings. They fixed a pole in the earth for a centre, and with a cord from it described a circle; this pole and the cord will be seen to be one of the principal elements for astronomical instruction. (It appears to the author of this paper to have been the only object serving them for a gnomon.)

The various meanings given to the numbers in their language allude to the phases of the moon, agricultural operations, their superstitions; and in this way we are conducted to the formation of their calendar.*

The Indians had mentally in their hands these symbols; and thus, by merely giving a turn to the fingers, they knew the state of the moon, and the positions of their agricultural and other affairs.

The year consisted of twenty moons, and a century of twenty years;† they commenced a moon from the full-moon

* Humboldt, *Views*, ii, p. 118, says, that Duquesne has made various etymological researches on the words which denote numbers in the Chibcha language. He asserts "that all these words are significant; that all depend on roots which relate either to phases of the moon in its increase or wane, or to objects of agricultural worship." Humboldt thought this difficult to verify, and observed, that we cannot be too mistrustful of etymological researches, and only presented the significations of the numbers from 1 to 20, as given in the MSS., and in the drawing.

† Among the Muizcas, the day was divided into four parts: three days

in the sign of Ubchihica, or brilliant moon; counting seven days on the fingers, beginning at Ata, which follows Ubchihica, and they found the quadrature in Cuhupcua; counting from this, seven, they found the next immersion of the moon in Muyhica, which means anything black; and the following day the conjunction was symbolised in Hisca, or the union, or nuptials, of the sun and moon, which was a capital dogma of their belief and sanguinary rites; then counting eight days, they found the other quadrature in Mica, which means a changing object, thus denoting the continual variation of its phases. The first aspect of the first phase was signified in Cuhupcua, and as in this symbol fell the quadrature, they gave it two ears, calling it deaf.

The same symbols served to count the years, and contained a general doctrine, in regard to the sowing season.

Ata (*Atl*—water in Aztec) and *Aca*, represented the waters in the sign of the toad, for when this animal most loudly croaked, it was the signal that the time of sowing was near.

Bosa, an enclosure, made round their grounds to preserve them from injury.

Mica, to look for, to find, to choose small things; also means the care they should have in choosing seeds for sowing.

Hisca, green things; as the rains made the fields look green and gay.

Ta, enclosure for sowing. The sixth month of the season, which corresponded to the harvest.

Cuhupcua, their granaries, which had a snail-like shape or winding like the ear. Cuhutana has the same root, signifying the corners of the house where the grain was deposited.

Sahuza, tail, the month, or end of the sowings; has also to do with the pole fixed in the centre of a circle at the end of the sunas or sacred paths, which were level and broad, and where they held their solemnities.*

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made a week, and ten weeks a lunation, or month. The rural year was composed of twelve Sunas; and at the end of the third year another month was added. The civil year, or Zocam, consisted of twenty Sunas, and the ritual, or sacred year, of thirty-seven Sunas. Five ritual years made a small cycle, and four of these a great age,—equal to a real solar cycle of sixty years.

* At Samagoz, according to Humboldt, was celebrated the cycle of fifteen

Aca, two toads or frogs coupled.

Ubchihica, may allude to the festivals.

Gueta, house, field; represented by a toad at full length, emblem of felicity. They marked the period or periods connected with the year by the sacrifice of human victims.

They did not repeat the word *Zocam* or year without its corresponding number, as *Zocam ata, Zocam bosa*, etc. In the same way with the word *Suna* (the circular platform), when at sowing time and harvest their feasts and sacrifices were held, as *Suna ata, Suna bosa*, or one platform, two platforms, and thus it was that these places were like books, in which were registered their doings.

Twenty moons, then, made a year; which ended, they counted another twenty, and then going round a circle continuously until concluding a twenty of twenties. To intercalate a moon, which has to be done after the thirty-sixth moon, so that the lunar year may correspond with the solar, and to guard the regularity of the seasons, was easily done. As they had in their hands the whole calendar, they sowed two enclosures, successively, with a sign between them, and the third with two. Upon this principle were conducted their astronomy, idolatry, politics, agricultural affairs, and their surveying.

We will now distribute these *Muizca* signs with the fingers, (the indexes with notches on the pentagonal stone), and this digitated method affords the following combinations. Let us suppose that *Ata*, the first finger, corresponds with January, the proper month for sowing. Continuing with the fingers, we come to the second enclosure in *Mica*, intercepting *Bosa*, which is between *Ata* and *Mica;* so that this enclosure is made in the thirteenth moon in respect to Ata. Proceeding with the fingers from Mica, the enclosure corresponds in Hisca, intercepting Muyhica, which is between Mica and Hisca, the enclosure in the thirteenth moon. Run the fingers from Hisca,

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years, by the sacrifice of the Guesa, or the wanderer. At the age of fifteen he was conducted to the column, a species of gnomon, destined to measure the solstitial shadows, and the passing of the sun over the zenith. When the procession arrived at the column, they tied the Guesa to it, and then poured a volley of arrows into him. They then tore his heart out, offering it to Bochica, the Sun-King; the blood was received in sacred vessels.

then the enclosure will be in Sahuza, intercepting two signs, Ta and Cuhupcua, which are between Hisca and Sahuza; this is in the fourteenth moon in respect to Hisca. This moon Cuhupcua (deaf) is that which is intercalated, because it is the seventeenth of the second Muizca year, which number, added to the twenty moons of the first year, produces thirty-seven, making the lunar and the solar years equal, and Sahuza becomes a true year.

This intercalation, which is perpetually verified, leaving aside thirty-seven, or deaf moon, leads to a belief that between the two ordinary years, of twenty moons each, there is another, a hidden astronomical one of thirty-seven moons, so that moon thirty-eight is the true year. The Muizcas, without understanding the theory of this proposition, found it necessary to add this moon at the end of each three lunar years, in consequence of the twelve anterior ones being of twelve moons, and the third of thirteen; so they preserved the astronomical year, and the people noted no difference in the ordinary year of twenty moons.

The ordinary year of twenty moons served for the period of truces in their wars, purchases, sales, etc. But the astronomical year and the intercalated of thirty-seven moons, which counted for their sowing, served principally for agriculture and religion. The account was kept by their xeques or priests noting the epochs by sacrifices, *and engraving them on stones*, by means of symbols and figures, as is seen in the pentagon in my possession (the one figured by Humboldt of petro-silex, of a green colour), which I will presently advert to.

The century consisted of twenty intercalated years of thirty-seven moons each year, which correspond to sixty of our years; composed of four revolutions, counting five in five, each one of which was of ten Muizca years, and fifteen of ours, until twenty were completed, in which the sign *Ata* returned to where it had commenced. The first revolution was closed in Hisca, the second in Ubchihica, the third in Quihicha hisca, and the fourth in Gueta.

The week was of three days, and was signalised by a market on the first day. They divided the day Sua and the night

thus: Sua-mena, from sunrise to noon; Sua-meca, noon till sunset; Zasca, or time for food, sunset to midnight; Cagui; midnight to sunrise, when they had their morning meal.

The people believed that their chiefs had command over the stars, and absolute masters over good and evil. Nothing was done without the advice of the priests, who made the calendars, which were highly paid for. Care was taken to signalise the annual revolutions by notable acts. Sowing time and harvest had their sacrifices. Each town had its calzada and suna; the calzada commenced at the cercado, or habitation of the cithua or chief, of half a mile in length, at the end of which was the suna or platform, with a pole like a mast, to which was tied the human victim to be sacrificed to the sun or moon, so that they might obtain an abundant harvest. The Indians came in troops, adorned with jewels, figures of moons and half-moons of gold; some disguised in the skins of bears, jaguars, and pumas; some with masks of gold, having tears imitated on them; others followed whooping and laughing, jumping and dancing wildly; others wore long tails; and arriving at the end of the causeway, sent a shower of arrows at the victim, causing a lingering death; the blood was received in various vessels, and the proceedings terminated with the accustomed scenes of drunkenness.

The procession, etc., was symbolic of the calendar, and had it been depicted, it would have given us a better knowledge of the signs attributed to the said calendar.

The victim destined to solemnise the four intercalated moons at the commencement of the century, underwent a peculiar induction. He was a youth from a particular town, situated in the plains now known as those of San Juan.* His ears were pierced, and he was brought up in the Temple of the Sun

* Humboldt observes, that it is remarkable that the astronomical worship of the Muizcas came to the table-land of Bogotá from the eastern side, from the plains of San Juan, which extends towards the Guaviare and the Orinoco. I find the following in Pedro Simon's *Noticias de Tierra Firme*, p. 186. "Near San Juan de los Llanos was found a large building of more than two hundred paces in length, with two doors in front. It was a temple, where sacrifices were made to the sun. Here many virgins were offered by their fathers as a sacrifice to this luminary; he who had charge of this place was the Mohan, or priest."

at Sogomoso; at the age of ten years (our) he was led out to walk, in memory of the peregrinations of Bochica, their founder (and who had the credit of inventing their calendar), who, they believed resided in the sun, living there, in an eternal and happy state of marriage with Chia, the moon, and having the stars as their brilliant family.

The youth was bought at a high price, and deposited in the Temple of the Sun until he was fifteen, when he was sacrificed, his heart and entrails being torn out, and offered to the sun. The youth was called Guesa,* or without a home. He was also known as Quihica, or door, as was Janus, or the beginning of the year, among the Romans. Guesa also signifies a mouth, because he interceded for the nation with the intercalated and deaf moon, which heard his lamentations from the earth. The people believed that their victims implored for them from within their habitations, so they sacrificed parrots and macaws, but not before they could repeat words of the Muizca language. Notwithstanding all the sacrifices, the intercalated and deaf moon went on its way without any alteration of the calendar.

To Bochica were given two companions or brothers, symbolised by one body, three heads, one heart, and one soul. The toad or frog, had its place in the heavens. Tomagata, an ancient zaque, was deified, and had a place in the calendar. Such was the heaven of the Muizcas.

Ata is a toad in the position of springing, characterising the beginning of the year. Aca, a toad from whose tail another is forming, symbol of that moon in which these animals begun existence, and their croaking announced the rainy season, and was the sign that sowing must commence. Gueta is the toad, laing at full length, meaning abundance and felicity. To other signs they gave human characters; as the sun and moon with eyes and nose. Bosa was represented by a nose; Mica, two eyes open; Muyhica, two closed eyes; Cuhupcua, two

* See writers on Mexico, on the sacrifice of a beautiful youth to Tezcatlepoca, the Soul of the World. A similar description is given by Servius of what was practised at Marseilles a thousand years before the Christian era. Herodotus also mentions a similar proceeding.

ears; Ubchihica, one ear. They probably wished to give an idea of the moon's phases. Cuhupcna looks like a basket, and signifies the harvest. Ta and Sahuza are figured by the pole and cord, by which they made the circle for the ground plan of their habitations and fields. Hisca, the union of two figures, was the symbol of fecundity. They had other significations.

The toad is, without doubt, the symbol of the first moon of the year and century. It was put among their deities, and represented in various ways. When springing it corresponds to the first sign, Ata, and is thus engraved on many stones; on some stones with a tail, which may be Quihicha-ata, or number twelve; for, continuing the jumps or springs, so as to denote future months, he designates with his tail those months he leaves behind. On some stones the toad is seen without feet, which appears to represent Gueta, a sign of quietude or rest, not influencing agricultural operations. Sometimes the head of a toad is united to the head of a man; at others the body without the feet, turned into an idol, with a tunic, also the tailed toad without feet.

I now describe the pentagonal calendar A.

a is a toad on a plain surface, in the act of jumping.

b, a sort of finger, or index, having three lines or notches.

c, the same, but is outside the centre of the line, followed by the others.

d is the same, preserving its central position.

e, the body of a toad without feet.

f, a snake.

g is a partial circular body, at the upper part of which is *h*.

B is the reverse.

i is a circle, formed from a centre and cord.

h, a snake; *a*, the toad; *b*, *c*, *d*, the indexes.

Interpretation.—On the stone* at A is symbolised the revo-

* This pentagonal stone, or lunar calendar, indicates 5 of the priests' years of 37 moons each; it exhibits 9 signs, because 5 times 37 moons are contained in 9 Muisca years. Four pentagonal stones gave the 20 intercalations of the "Deaf Moon," which took place in a cycle of 740 sunas. *Humboldt.*

Other explanations:—

a Toad or Frog, without head, ata, and emblem of water.

b, *c*, *d*. Three pieces of wood, marked by three transverse lines.

lution of the first Muizca year, commencing on Ata and ending in Hisca, which includes nine years and five Muizca moons.

The Muiscas, who in all things used the circle, here preferred the pentagon, to signify that they spoke of five intercalated years.

a, the toad in the act of springing, began the year and century.

b, this sort of finger, or notched piece of wood, signalised by the three thick lines, means three years.

c, finger is omitted.

d, finger counted with, for three years, and with those of *h* produce six. This denotes the intercalation of Quihicha-ata, which succeeds the six Muizca years, as is seen in the table; and is of such moment among the Indians, as belonging to the toad, which regulates the whole of their calendar.

e is the body of a toad without tail and feet, symbol of Quihicha-ata, and wanting the feet, properly expresses its intercalation. The intercalary month is not computed for the sowing, and thus they imagined it without action or movement. There is seen on the plain part the toad ata, which appears to signify that in both places the toad is meant.

f; this serpent represents the sign Sahuza, which is intercalated after Quihicha-ata, at the two Muizca years, represented by two thick lines (at the tail of the figure) corresponding to eight year, as seen in the table.

We now go to the flat portion, B.

h, the serpent, is a reproduction of Sahuza, and as it is lying in a parallelogram, is the symbol of hisca, and signifies

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e Tadpole, with long tail and without feet; frog in repose; useless.

f Indicates by eight transverse lines, divided by five and three, that at the eighth Muisca year, the moon governed by Suhuza is intercalated. This is represented at *i* by a circle, traced by means of a cord round a column.

f, h Represents serpents—emblems of time.

g The sign Hisca, alludes to the nuptials of Bochica and Chia.

b, c, d The nine strokes are nine Muisca years.

h. The lock which closes the temple.

Mr. Helps in his admirable work says: "Humboldt calls it a stone with hieroglyphical signs of the lunar calendar, representing the order in which the intercalations, that bring back the origin of the year to the same seasons, are made, is a monument so much the more remarkable, as it is the work of a people whose name is almost unknown in Europe."

that it is intercalated immediately after Sahuza, in the second year, and has two thick lines on its back.

The principal end of this chronological stone is to signalise the intercalation of the sign Hisca, as being the end of the first revolution of the Muizca century. For greater clearness, these years are counted in the three fingers *b*, *c*, *d*, producing together nine years, which give this notable intercalation, happening at nine years and five months, as is seen in the table.

g at A is a closed temple.

h is meant for a wooden lock, of the same form as used by the Indians of the present day. The holes in the two ends serve for the stakes they use to fasten the door, and signify the first revolution of the century closed in hisca. To continue the time, it was necessary to imagine that Guesa opened the door with the sacrifice already alluded to, the circumstances of which were symbolical, and related to these revolutions of the century.

The first revolution of the century was consecrated principally to the nuptials of the sun and moon, symbolised in the triangle.

Explanation of the Diagram of Circles of the Muisca Year.* c.—The first or interior circle represents the twenty moons of the first Vulgar Muisca year, all of which signs are intercalated in the space of a century. The second circle expresses the Muizca years corresponding to the intercalation of each sign. The third circle expresses the order of the intercalation. *Example:* I wish to know in which Muisca year the sign Mica (the third year of twenty moons) is intercalated. I see in the diagram the number three (which represents Mica) in the inner circle; I find that in the second circle it corresponds to number thirty-six, this is the year sought for; I see in the third circle that it corresponds to number nineteen; and thus the intercalation of Mica is in order, or the nineteenth of the century.

The intercalation of Gueta, 20, is the last of the Muisca year 37. This is after the vulgar Muisca century of twenty

* This diagram was, in all probability, projected by Duquesne.

moons, and seventeen years more, so that, the century ending with the astronomical revolutions of twenty intercalated years of thirty-seven moons each, three vulgar years are required to complete two vulgar centuries.

Arriving at this point, they took no account of those three vulgar years, they did not require, for agriculture, religion, or history beginning again in Ata (which had been arrived at in its turn), a vulgar year, the beginning of a fresh century, like the last described.

Having said thus much on the ancient astronomy of New Granada, I will say a few words as to the scientific operations on the same subject, just before the separation of the Colonies from the mother country; adding some notice of the labours of Caldas, who perished in his prime by the hands of his Spanish butcher, Morillo. By the death of Caldas very much indeed was lost to his country and to science, by the burning of his MSS., books, and collections. He was born in Popayan in 1771.

The first astronomical observatory erected in South America was in 1803, principally through the instrumentality of the Spanish botanist, José C. Mutis. The King of Spain ordered some instruments to be placed there, and the observatory, an octagonal tower, was placed under the direction of Francisco J. de Caldas, in 1805. He established the latitude of the observatory to be 4° 36′ 6 N., susceptible to an error of 5′ ; the longitude to be in 4h. 32m. 14; W. of San Fernando at Cadiz (36° 27′ 45″ N., 0h. 24m. 49. 1 W. of Greenwich).*

It had a pendulum that had belonged to Condamine ; an octant that had been used by Humboldt in his voyage up the Oronoco ; and the marble slab that had belonged to the acade-

* The second observatory erected was in Santiago de Chile, temporarily by Lieut. Gilliss from 1849 to 1852; converted in 1854-5 into a national one under Moesta, is in 33 deg. 26 min. 25 sec. 70 S; 4 h. 42 min. 32 sec. 97 W. of Greenwich.

There appears to be an observatory at the island of San Croix in the West Indies.

That of Washington 38 deg. 53 min. 38 sec. 6 N.; 5 h. 8 min. 14 sec. W. of Greenwich.

That of Philadelphia 39 deg. 57 min. 7 sec. 5 N; 5 h. 0 min. 38 sec. W. of Greenwich.

There are observatories also at Cincinnati, and at Toronto in Canada West.

micians, who measured an arc of the meridian at Quito. (This slab, I believe, was sent back to Quito a few years since.)

Quito, or Ecuador.—Quito has been called the classic soil of the astronomy of the eighteenth century, in consequence of the labours of the academicians in determining the length of an arc of the meridian. The general history of Quito may be divided into the following sections: 1st. That of the Quitús, of which we know very little; 2nd. That of the Caras, who conquered Quito about 1000 A.D., under chiefs called Scyris: it is of these and their works we have to take some particular notice. 3rd. The conquest of Quito by the Incas of Peru; the 4th. The conquest of the Incas by the Spaniards.

These Caras, or Caranes, I suppose to have been an offshoot from one of the coast nations of the north of Peru. They conquered Quito, and extended civilisation there, but which was different to that of the Peru of the Incas. (The history of the coast nations of Peru, such as the builders at Trujillo and Pachacamac, in particular, and some nations of the interior, have still to be investigated; they were not Incarial.)

In lieu of the Peruvian quipu as a register, and for other such like purposes, they resorted to the use of small pieces of stone, metal, clay, and wood of various sizes, forms, and of several colours, by which they could keep accounts, also the record of principal occurrences; these objects were kept in compartments in their temples, tombs, and dwellings.

The religion of the Scyris was the pure worship of the sun, moon, and stars. They had also as deities Pacha and Eacha, supposed to have been ancient heroes. They had two temples, one dedicated to the sun, the other to the moon; that to the sun was a square stone building with a pyramidal roof; the door was large and to the east, so that the first rays of the sun could shed its rays on a figure of that luminary, which was of gold. The temple was on a high hill, six hundred feet above the city, called the Tavira, but by the Spaniards the Panecillo. This temple was celebrated for the celestial observations made there, and the Scyris themselves were very fond of the study, which was cultivated primarily by the first of all astronomical instruments, viz., the gnomon. They had on each side of the

door of the temple a stone column; these have been called "ancient and beautiful," and were used to observe the periods of the solstices, which regulated their solar year; at which time they had their two principal festivals; their sacrifices were perfumes, resins, flowers, and fruits. This temple was rebuilt and beautified by Huayna-Capac, and the columns remained in their places until the arrival of the Spaniards, who threw them down, demolishing them, in search of supposed hidden treasure there, telling the Indians they required these pillars for their buildings in the city.

We have seen that the Scyris had two high stone columns to observe the periods of the solstices, for regulating the solar year which they followed; it is also stated that they had twelve squared pilasters of stone placed around the temple of the Sun, as so many gnomons, to show in their order the first day of the month: most probably their own invention, and used long before their conquest by the later Incas of Peru.

The Temple to the Moon and Stars was three miles distant from that of the Sun, on the hill now known as that of St. John the Evangelist. It was circular, and had many round openings in its circumference, so placed that the moon's rays could enter by one or the other, and fall upon a silver image of the moon, which was suspended in the centre of the temple. Above it the roof was of blue cloth, studded with stars of silver. The moon had as many festivals in the year as there were first days of the moon, and all that day was devoted to music, dancing, and drinking.

In my *South American Antiquities*, p. 77, I have given for the latitude of the city of Quito 0° 15′ 00″ S.; longitude, 81° 5′ W. of Paris; add 9′ 21″ E. of Greenwich = 81° 14′ 21″ W. Greenwich; 10,234 Spanish feet above the level of the sea, and mean temperature 60° F. The brothers Ulloa, in 1737, gave it in 0° 13′ 33″ S. and 298° 15′ 45″ from Teneriffe.

Velasco *(Hist. Quito,* iii, p. 57) in describing the town of Taruquí, which is just below the equator, adverts to it as having been the spot where the French academicians erected the pyramids, which was the cause of much discussion. The academicians had been sent in 1736 to Quito, to measure an arc of

the meridian, so as to determine the true form of the earth. In November of that year, they put up two pyramids in the plain of Yaruqui, to mark the ends of their base line. The inscription, engraved on marble slabs, displeased the two Spanish commissioners who were associated with them, who complained that the expressions therein were not only insulting to the Spanish nation, but to the monarch. They courteously begged that the inscriptions should be corrected; but being unable to obtain this, they appealed to the Royal Audience at Quito, which body issued a decree that not only should the inscriptions be removed, but the pyramids abolished, which was immediately done.*

The French appealed to the Court of Spain, where they trusted to be triumphant with the favour of Philip V; but they were deceived, for the king approved of what had been done by his subjects, and although other inscriptions had been composed, he had them corrected to the taste of the Spanish nation. In a note is the following:—In November, 1838, His Excellency Don Vicente Rocafuerte, the then President of Ecuador, went to Yaruqui to replace this scientific monument. But he put first below the foundation a small urn, in which was a plate of metal with the following inscription:—

"The French academicians—Luis Godin, Pedro Bouger, and Charles Maria de la Condamine,† sent by Louis XV, king of France, during the ministry of M. Maurepas, erected these pyramids in the month of November, 1736; they were destroyed by order of the Kings of Spain; but re-erected one hundred years afterwards, in November 1836, in the same places determined by the French academicians. This has been done by order of His Excellency Don Vicente Rocafuerte, President of the Republic of Ecuador, the Minister of Foreign Affairs being General Antonio Morales. At the same time the throne of France was occupied by His Majesty Louis Philippe,

* In the section on New Granada, I have alluded to Caldas rescuing one of the slabs from "ignoble purposes."

† Connected with them was M. Couplet, who died at the commencement of the affair; there was also a M. Verguin, and Jussieu the botanist; he examined the Chinchonas of this region.

king of the French, and the President of his Council was M. Thiers; and there was in this capital of Quito M. J. B. W. de Mandeville, French Consul to this Republic. This slab of metal was made and engraved in the Mint of Quito, 20th November, 1836, the first director being Don Alberto Zalazza; and it was placed at the base of this pyramid the 25th of the same month."

There was also engraved on a stone slab (in Latin) the following, being a translation :—

Vicentius Rocafuerte, President of the Equadorian Republic, restored these twin pyramids, at once a noble and befitting monument to learning, which the wrongful spirit of bygone times had destroyed. An association, in the year 1836, assisted by Louis Philippe, King of the French, and supported by eminent men of both countries, directed and encouraged this restoration, designed to adorn these shores.

From Vigne's late *Travels in South America, Mexico, &c.*, ii. p. 218), "In the Alameda of Quito there is a sun-dial placed there by the Jesuits in 1776; simple as this instrument is, I know not of the existence of any other in South America."

At p. 223,—On leaving the city of Quito, and continuing his arduous journey to New Granada, he stopped at the pretty hacienda of Casabamba. He says, "There had been a great deal of cultivation the whole distance, the patches of red and yellow quinua (chenopodium) harmonising beautifully with the corn-lands; in the hedges were *tuberoses* and *cancellaria*. From the *mirador*, or tower of the hacienda, the view was beautiful and extensive. I could see Chillo in the far distance. Here I was on the Equator. On this plain of Yaruqui are the pyramids at either end of the base-line, measured by the French Academicians,—Condamine, Bouguer, and Godin (in 1736). I rode up to one, which was a small white pyramid. A long inscription in Latin, on a marble slab, in the wall of the college of Quito records the results of their observations, which extended over three degrees of the equator; and, amongst others, that the college itself is min. 13, sec. 18 south of the line."

Chile.—The first information we have of this country is when the tenth Inca of Peru sent an army of 10,000 men for its

conquest, about 1400 A.D. This army descended from the Andean table-lands to the desert of Atacama, and went south to Copiapo, where they met with so much resistance, that the Peruvian commander had to be reinforced with another 10,000, when the Copayapenicas found it prudent to obey the Inca's laws, and receive his religion of Inti, or the worship of the sun.

The Peruvians, again reinforced, journeyed onwards to Huasco, Coquimbo, and Quillota; but in the country where now stands Santiago, the capital, they found it inhabited by a fine race of Indians called the Purumauquas, whose god of war, Epunamum, was likewise an oracle, and sought for in a cave situated nine miles south-east of Santiago, now known as Peña-lolen. We are further informed that the Peruvian Indians of the invading army taught the Purumauquas to worship the sun, which they both did in the rocky fastnesses of Peña-lolen.

We now come to the Indian nations who inhabited the country further south; and it may be observed here, that the Inca's arms did not get further than the river Maule. These still brave and warlike Indians have been called Araucaños, which name was given to them by the Spaniards; it is one, however, of reproach, and means ferocious fellows; the Indians call the Spaniards Chiapi, or bad soldiers, and Huincas, murderers. They called themselves Alapu-che, children of the land.

The present people have not even traditions of their origin. They do not appear to have had any temples or idols. Pillan is their Supreme Being; Alooc, the devil.

Old Spanish writers tell us that they had notions of geometry, and they had words in their language (which looks as if their language attached itself to the wide-spreading Guarani) for a line, angle, cone, cube, and sphere. They had no alphabet or pictorial writing, but a simple species of Quipu, unlike that of the Peruvians. In astronomy they had some positive notions, and are said to have distinguished the planets from the stars, took account of the solstices and the equinoxes, the constellations, the milky-way, the eclipses, and the phases of the moon. Their solar year of 365 days, Thipantu, commenced on the 22nd of December, after the southern solstice; this was called

Thaumathipautu, or the head and tail of the year. The year was divided into twelve moons, or cujen, of equal duration; the moon into thirty days; the day, or elegantu, into twelve hours; the night, as a matter of course, had also twelve hours; then, at the end of the year, came the five complementary days. Each month or moon was designated by a special quality; December was huevun--cujen, the month of new fruit; January, avun-cujen, the month of fruit, or the month of harvest; months of foam, disagreeable, traitor of the new winds, of maize, etc.

Astronomical Observatory at Santiago de Chile.—Professor Gerling, of Marburg, having called attention to the question of the sun's parallax, which until then had been founded on the movements of Venus before the sun's disc in the past century, the government of the United States offered to be at the expense of such an inquiry, and Santiago de Chile was the spot elected for making the observations. Lieutenant Gilliss carried on the research from 1849 to 1852; after which, the Chilian government caused a national observatory to be founded, which became possessed of the instruments brought by Gilliss. He had erected his place of observation on the summit of the hill of Santa Lucia, composed of metamorphic porphyry, and on the 19th of September, 1854, Dr. Charles Mösta took possession of it; but when he wished to establish with exactness the azimuth of the meridian circle, he discovered a curious physical phenomenon, which periodically altered the visual line of the instrument. The cause of this was, the expansion and contraction of the rock on which stood the observatory, produced by the sun's heat during the day, and the lower temperature at night. This and some other disturbing causes made the government order the construction of a new observatory in the gardens of the School of Agriculture.

The astronomical labours of Dr. Mösta have been considerable and important. In 1860 a volume of his works was sent to Europe, the first of such a class of researches made in South America.

The latitude of his meridian circle was determined by 1047 star observations, 199 zenithal distances in superior culmina-

tions, 210 in inferior, 638 polar distances of stars; these compared with various catalogues give 33 deg., 26 min., 25 sec., 70, south latitude for the observatory.

The longitude was determined by culminations of the moon and certain stars, and compared with the observations of other great observatories; the result was a difference of 4 hours, 42 min., 32 sec., 97 W. of Greenwich.

In the early part of 1854 I was in Santiago de Chile, and made the acquaintance of Mösta, who was good enough to show me over the observatory, explaining to me the circumstances of the expansion and contraction of the hill.

Some time afterwards he sent me a copy of his Report on the subject; I was then at the port of Iquique in Peru: I made a translation immediately of the same, sending it to the Royal Astronomical Society of London: when, some years afterwards, I found it printed in their Proceedings (my name is not attached to it as the translator), see also the *Trans. Geogr. Soc.* 1858.

In my *South American Antiquities*, p. 275, the corrected longitude of Valparaiso is 4h., 46m., 28s., 9 W. of Greenwich, or 17 S. error, or that the whole coast of South America is placed this quantity too much to the West. Santiago being 3m. 56s. 5 E. of Valparaiso.

New Barometrical Observations.—In 1861-2, a large barometer was erected in the National Astronomical Observatory of Santiago de Chile. By this instrument has been observed a singular phenomenon, new to science. We know, through the observations of Humboldt, that the barometer rises and falls during the day in a peculiar manner. This movement has been observed with much regularity in Santiago de Chile during the winter and summer months; but in the month of February the movement entirely ceases, showing then only the ordinary maximum and minimum heights in the twenty-four hours. Moesta has tried to explain this occurrence, and has demonstrated that the oscillatory movement of the barometer is produced by the sun's power, analogous to that of gravitation, and that the said movement ought to disappear in the month of February, in consequence of the great variation of temperature during the course of the day. Thus the interest-

ing result has been arrived at, that by virtue of the sun's power a movement is manifested in the atmosphere analogous to the action of the tides; and it is this that causes the rise and fall of the barometrical column in Santiago about '1·3 of a millimètre'. This force exercised by the sun cannot be what is generally known as that of attraction; but it is the same electric force which causes the diurnal variations of the magnetic compass, and the same that produces such visible changes in the forms of comets whenever they approach the vicinity of the sun.

Patagonia.—All I have to offer on astronomical matters connected with Patagonia is the following :—

The year Kechnia is divided into twelve moons or months; and it is said that in spring they add the supplementary days, I suppose to make up 365, a solar year. The milky way is the path of the old Indian hunter chasing the ostrich. The three kings (of the Spaniards) are called Tapolec, or the three bolas or balls used in hunting, which they threw to catch the ostrich, etc.

The Magellan clouds are the heaps of feathers collected by the old hunter.

Peru.—Of the periods when the various tribes in Peru increased and formed themselves into nations, we have no records whatever. By exploring the dark gulfs of succeeding times we faintly discern the myths relating to nations taking up positions on the extended line of tropical coast, in the temperate valleys, but more particularly on the table-lands of the mighty Andes. On these table-lands there was a pre-incarial civilisation, the latter portion of which period we may call the Aymará, some of its ruins being well preserved at Tia-Huanaco ;* out of this in all probability sprung the Inca or Peruvian nation, the civilisation of which was established at Cuzco.†

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* See a paper of mine and engraving, from a photograph, of the Aymara sculptured monolith, in *The Intellectual Observer* for May, 1863.

† Delphi was made the centre, the omphalos or navel-stone, of the world. Cuzco was the centre of the Inca world; and Cuzco is said to mean *navel;* however, it is stated that it is derived from *cozcos,* heaps of stone, that had to be cleared away before the city could be built.

However, at that time, there were flourishing nations to the south of Cuzco, as the Aymarás or Collas; in the north the builders of Ollantai-tambo; to the east, the semi-civilised nations of Tucuman, and the still wild tribes in that direction; to the west were the great Chincha nations of the coast, including the builders of Pachacamac; and further north the Chimú rulers of Trujillo, the remains of whose palaces, tombs, and works of art are still to be seen in good preservation. The more enlightened of these nations were sun-worshippers, and in various ways; but it is with the Inca people we have to do in regard to their peculiar progress in astronomy.

As to the chronology of the Inca dynasty, the number of rulers (say fourteen) allotted to it by Garcilasso and others is too small to have done all that has been attributed to the Incas; and the hundred rulers named by Montesinos, and those who follow his notions, are most problematical, and in no way to be depended on.

I prefer most decidedly leaning to the smaller number, in examining the state of astronomy of the Peruvians, during the last, or dynasty of Manco Capac, which appears to have commenced about 1000 A. D.

Before proceeding with what may be considered reliable data, I will allude to some observations as found in Montesinos, which, however, it will be well to consider as belonging to the order of myths.

Montesinos visited Peru a hundred years after the conquest; his favourite idea was that Peru was the Ophir of Solomon, and that America was peopled from Armenia!

Five hundred years after the deluge (4004 B. C.) begins his list of the Peruvian monarchs, amounting to 101, up to the conquest of the country by Pizarro.

1. Pishua-Manca; he built Cuzco.

3. Huainaeva-Pishua; during his reign was known the use of letters, and the amautos taught astrology and the art of writing on plantain leaves.

4. Sinchi-Cozque, also called Pachacuti, because he reigned 1,000 years after the deluge.

5. Inti-Capac-Yupanqui. He instituted the solar year as

consisting of 365 days six hours (?) and the divisions of the years into cycles of tens, hundreds, and thousands.

6. Manco-Capac II. During his reign appeared two comets, and two eclipses of the sun.

21. Manco-Capac-Amauta. He was addicted to astronomy, and convened a meeting of the learned, at which it was agreed that the sun was found to be at a greater distance than the moon, and that both followed different courses. At the same time he fixed the beginning of the year at the summer equinox. This may have been about 2658 B.C.

31. Pachacuti IV commanded the year to begin with the winter equinox, about 2360 B.C.

34. Ayay-Manco. He gathered together, in Cuzco, the Amautas to reform the calendar, and it was decided that the year should be divided into months of thirty days, and weeks of ten days, calling the five days at the end of the year a small week. The year was collected into groups of tens, or one hundred years, which formed one sun or century. This was about 2286 B.C.

38. Capac-Raymi-Amauta. Celebrated for his astronomical knowledge; he knew which was the longest and the shortest day of the year, and when the sun reached the tropics. His subjects, in honour of their ruler, gave to the month of December the name of Capac-Raymi. He died say about 2216 B.C.

44. Hina-Chiulla-Amauta-Pachacuti. The fifth year of his reign corresponds with the year 2500 after the deluge. (I make it about 2107 B.C.)

51. Yahuar-Huquiz; he intercalated a year at the end of four centuries, say about 2027 B.C.

60. Manco-Capac III. According te the Amautas, he reigned in the year 2950 after the Deluge; consequently, at the time of the birth of Christ. By my calculation, according to elements given by Montesinos, I make the period of the death of this ruler about 1521 B.C., which shows that Montesinos has allowed imaginary periods of too great a length for the reigns of his rulers.

54. Titu-Yupanqui-Pachacuti V. In his reign was completed the third millennary cycle since the deluge.

55. Titu. Great disturbances, and the use of letters lost, 70 A.D.

78. Topa-Cauri-Pachacuti VI. Introduced the use of the quipus, or knotted coloured strings. The 9th of his reign corresponds with 3500 after the Deluge. (I make it 473 A.D.)

90. Inti-Capac-Maita-Pachacuti VII. During his reign was completed the fourth millenary cycle since the Deluge. Customs were corrupted, the royal power set at naught. A princess named Ciboca raised her son Rocca to the throne, and called him Inca, which means lord.

91. Inca Rocca reigned forty years. This is in all probability the Manco-Capac of Garcilasso's list of Incas (or the last dynasty). He commanded his people to consider the sun as the principal deity. There is a great discrepancy as to the period when Manco-Capac appeared, but I put it, in round numbers, at about 1000 A.D.

I cannot but come to the conclusion that the period, say of 553 years from the advent of Manco-Capac in Cuzco, A.D. 1000, to the death of Atahualpa in 1553, is too short a period for the civilisation of the Peruvians: but if we allow of the existence of other dynasties, before that of Manco Capac, then there will be time enough; but if we follow Montesinos, there will be a great deal too much.

Language.—The Quichua,* or the language of the Inca Peruvians, may be taken as one of the most important of the great American group of tongues. It was the policy of the Incas to introduce Quichua into all the countries they conquered, so that at one time it was spoken from the confines of Pasto in New Granada, to the river Maule in Chile, and from the coasts of the Pacific to the forests of Mojos. It was carefully cultivated by the Haravecs or bards, and the Amautas or wise men. They composed hymns to the elements, which are considered not inferior to the Mantras of the Rig Veda; and love songs equal to the odes of Hafiz. In later times two Quichua dramas have been composed and numerous love-

* See *Contributions towards a Grammar and Dictionary of the Quichua*, by C. R. Markham, 1864. Trübner.

ditties and elegies are handed down orally. The subject of the *Quipus,* or writing by means of knotted coloured strings, requires further investigation.

Arithmetic of the Peruvians.—Some early writers state that the ancient Peruvians had picture writing, and even hieroglyphs; however, none have been handed down to us. There are figurative scratches on a few stones. But if they had no characters for simple sounds, they had an interesting method by which they composed words and incorporated ideas, which consisted in the dexterous intertwining of knots in coloured strings, so as to render them auxiliaries to the memory, namely, the quipu. It was generally of twisted wool, consisting of a string or cord, as the base of the document, and of threads, more or less fine, fastened by knots to it. These threads included the contents of the quipu, expressed by knots or intertwining. In the arithmetical system, a single knot means ten; two single knots joined, twenty; a knot doubly intertwined, one hundred; triply, a thousand; two of the last, two thousand, and so on.

It is probable that these knots were at first applied to purposes of enumeration only; but, in course of time, this science was so much perfected that those skilled in it attained the art of expressing by knots historical relations, laws, and decrees, so that they could transmit to their descendants the most striking events of the empire.

Mr. Markham, in his Quichua grammar, says that from 1 to 10 is expressed by single words; 11 to 99 are compound; 100, 1,000, 1,000,000 by single words; 10,000,000,000,000 was called chunca hunuy hunu; and infinity, pantac hunu.

Astrology.—It cannot be said that the Inca Peruvians had astrologers; but their observers were rather astronomers. They had priests who undertook divination by the inspection of the entrails of animals; the llama was generally sacrificed. Prescott observes that this inspection of the entrails of animals for the purpose of divination is worthy of note, as a most rare, if not a solitary instance of the kind among the nations of the new world, though so familiar in the ceremonial of sacrifice among the pagan nations of old.

Astronomy.—The knowledge of the learned men in mathe-

matical sciences was almost nothing. Notwithstanding their excellent system of numeration, the process of the quipus was very rudimental. They made maps with protuberances, indicating limits and localities; also for the distribution of lands.

They had made but little progress in astronomy, and in this respect were inferior to the Mexicans. The almost want of mathematical knowledge did not permit them deducing by calculation the annual movements of the sun, but they resorted to mechanical means to determine the principal variations of its course, by the aid of which they fixed the times of the solstices and the equinoxes. The method by which they discovered the exact time of the solstices is described by Garcilasso as follows :—

The times of summer and winter solstices they determined by means of eight cylindrical towers erected to the east, and eight to the west of Cuzco,* ranged four and four, two small ones of about eighteen feet in height, between two tall ones; the small ones eighteen to twenty feet apart. At the sides, at a similar distance, were the two larger towers—larger than the watch-towers in Spain—these larger ones served better to discover the smaller ones, or the space that was between them when the sun had to pass from its rising to its setting, which was the solstitial point; some of the towers in the east corresponded to the others in the west for the summer and winter solstices. To verify the time of the solstice, an Inca placed himself in a certain spot at the rising and setting of the sun, and noted if it rose and set between the two small towers, which were to the east and to the west.

Some authors say there were only twelve towers in all, others only eight. Gemelli says twelve on each side, in such position and distance from each other, that each showed the month at the rising and setting of the sun, and that each pillar had its

* Cuzco is built at the head of a valley. Two streams—the Huatani and Rodadero—join to the east of the Temple of the Sun, now the church of Santo Domingo; it appears to have been quite open to the east, so that the rising sun could impinge its rays on the golden sun placed on an altar at the other end. Before the temple was erected, the "beautiful pillar," or gnomon, in the centre of a circle. "On the hill of Carmenca," says Cieça, cap. 92 (who probably saw them), "there are, at certain distances, several small towers, which served them to keep account of the sun's movements."

particular name. However, in the drawing of the Peruvian Calendar I describe further on, there are two small gnomons close together, and six large ones = 8, probably on each side of Cuzco, or = 16.* I have not as yet been able to construct a satisfactory diagram of the positions of these gnomons.

Garcilasso continues, "To denote the precise day of the equinoctial they had columns (succanca) of stone, richly worked, in the open area of the temple of the Sun, which, when the sun came near the time, the priests daily watched to observe what shadow the column cast; this column was placed in the centre of a large circle, and a line was drawn from the rising to the setting of the sun, or from east to west, which they well knew from long experience. By the shade that the column made upon the line they saw that the equinox was approaching, and when the shadow took the line in the centre of the circle from the rising to the setting of the sun, and that at midday, when the column was bathed in light and shed no shadow, then they said that it was the day of the equinoctial. At this time they adorned these columns with garlands and odoriferous herbs, and put upon them the *seats of the sun*, saying that on that day the sun was seated with all its light on the columns, making offerings of gold, silver, and precious stones to the orb of day, with the greatest festivities.†

They observed that as they went north or towards the equator, a column gave less shade at noon, so they esteemed more and more such columns as were nearest to the city of Quito (0° 15′ S.), and particularly those on the sea-coast (of

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* Galileo, in his *Dialogues Cosmiques*, proposes to have recourse to such an arrangement, but of an horizontal character; his was more simple, more learned, but still singular.

† *Latitude and Longitude of Cuzco*:—

Pentland - - -	13° 32′ 35″ S.	72° 5′ W.	Greenwich.
Paz Soldan - -	13° 30′ 55″ „	74° 15′	„
Vigne (1860) - -	13° 35′ 18″ „	73° 26′ 52″	„
Observes, "in the *Alameda*, that this lat. and long. are marked on a sun-dial."			
Markham - - -	13° 31′ „	73° 3′	„

Vigne says, water boiled at 190° Fahr., = 11,100 feet (Pentland made it 11,380). On the 20th of June the thermometer stood at 9·30, a.m., in the shade at 74° Fahr.

the equator) ; and they concluded that the position of those countries was more agreeable and pleasing to the sun than those on which, in an oblique manner only, he darted the brightness of his rays. They had on these gnomons a style surrounded by a circle drawn upon an even surface and pierced. The Spaniards threw down the gnomons and towers as savouring of idolatry.

The Peruvians divided their year into twelve lunar months or moons, each of which, having its own name, was distinguished by its appropriate festival. They had also four weeks in their month. As their lunar year would necessarily fall short of the true time, they rectified their calendar by solar observations made by means of the cylindrical columns raised in the mountain of Carmenga at Cuzco.

They appear to have known that the solar year consisted of 365 days, commencing, say, on the 22nd December. Their months seem to have been alternately of twenty-nine and thirty days, to which eleven were added to complete the year, and were most probably included in the feasts of the last month or November. As to the excess of six hours over the 365, we have no positive information.

The Amautas observed the movements of Venus, the only planet that attracted their attention, and which they venerated as a page of the sun. They had a few constellations ; they knew the Haiades, which they called Ahuaracaqui or the jawbone of the tapir, and the Pleiades, or Oncoy coyllur.

Like all nations not versed in the course of the heavenly bodies, they were frightened at eclipses of the sun and moon, believing that they threatened to burst or explode upon the earth.

They explained the phases of the moon (Quilla), by saying that the planet was sick when it began to decrease, and for this reason they called the decline, the dying moon. They gave the name of sleeping to the new moon ; the crescent was the red moon, and dead moon the moon in conjunction. The entire lunation they divided into four equal quarters, beginning always with the first day of the new moon ; thus the first section or period lasted until the day of the fourth crescent, the second until the opposition, the third until the fourth

decline, and the fourth until the conjunction. They counted the months by moons, but the year from one winter solstice to another; this they subdivided into twelve equal parts, forming thus the solar year. The time which remained from the end of the lunar year until the completion of the solar was called the residue of the moon, and was devoted to leisure.* They distributed the solar year into four seasons: the spring, from the vernal equinox to the summer solstice; the summer, from the summer solstice to the equinox of autumn; the autumn, from the equinox of autumn to the winter solstice; and the winter, from the winter solstice to the vernal equinox.

The Peruvian Calendar or Zodiac. Late in the year of 1859, Mr. Markham gave me a pen and ink sketch (the original of which he refers to at p. 107 of his *Cuzco and Lima*); he asked me what it was. I said it appeared to me to be the first elements of a calendar, or zodiac. I looked through every book on Peru I could obtain, but could find no allusion to such an object; so, considering it unique, brought it before the Royal Society of Antiquaries in January 1860. I gave a drawing of it in my work on *South American Antiquities*.

Mr. Markham adverted to this interesting object thus:—"I have seen a golden breast-plate or sun; it is of pure gold, and the figures upon it are stamped, being convex on the outer side." It had lately been found at Cuzco, and was (and is still) in the possession of General Echenique.

I suppose this "golden breast-plate" to be an Incarial lunar calendar at least; it is not quite a circular plate. The outer ring is five three-tenths inches in diameter, the inner ring four inches. There are apparently four holes at the inner ring, so as to fasten it on the breast of an inca, or priest.† There are, seemingly, twenty-four compartments, large and small, including three at the top, the centre a triangular figure, in which are apparently two holes; at the bottom are two spaces;

* Velasco says the year was of twelve and a half lunar months, to make it correspond with the solar, having as many weeks as quarter moons.

† From *History of Horus of Nilopolis, the Hierogrammatist of his Native Place*, by C. Simonides, London, Trübner, 1863:—"The high-priest then at once put in his hands" those of the newly appointed hierogrammatist) "the circular tablet (*discus*) of the calendar. Now this discus contained the customs of the festivals peculiar to the various Egyptian Nomes, besides marking the day on which each of them ought to fall."

figures may or may not have been here, but it looks as if they were worn away.

I will first advert to the centre portion. It is surmounted by the prongs of a trident; at the lower end of the central prong and each side are four circles; there are two large circles on the end at which I first called the nose, and two inside of it; also two at the base of what may be intended for ears. These *eight* circles may represent the bases of the gnomons or towers. There are two large spaces as if for eyes; there are four horizontal lines, enclosing something like teeth. Underneath these are the eight angular bodies I had called sun's rays, but I now believe they represent one set of eight gnomons, two small ones in the centre being placed closer together. This is the first indication I know of regarding the size and distance of the towers which were placed on the hill of Carmenga. Underneath the eyes are two faces, and may be intended for the sun and moon.

Description of the calendar in connexion with the months:—

1. December, Raymi, or solemn festival—the first of the four great feasts in the year. It began with the summer solstice, and was kept with solemn music, songs, and dances. We may here observe that the Peruvians counted the months from the 20th, 21st, or 22nd, according to the solstices, until the same day of the following month, so that December included twelve days of January, or from one new moon to another.

In the space I have allotted to this month is the face of, most probably, the sun; the small diamond-shaped figure may represent Venus as the morning star; there is a similarly-formed figure underneath.

2. January, Huchhy-poccoy—from small, and to ripen, because the maize, or Indian corn, began to form small ears. Continuing the military exercises, they exercised the soldiers, by competition, principally in races; or they gave themselves up to pleasure, rewarding personal feats.

There is a space containing an elongated spherical figure, a quarter of a moon underneath, and two small circles on each side of the moon. Can these circles have anything to do with the bases of gnomons?

3. February, Hatun-poccoy-hatun, great; or that the corn began to increase in size.

In the space there is a ladder-like figure with four steps, two horizontal and two perpendicular lines joining; also two waved lines meeting, something like the head and body of a bird.

4. March, Paucar-huaray. Velasco says it means the month of spring, which unites the beginning with the end of the solar year; also, that in this month occurred the second principal feast of the year, preceded by three days of fasting, and it was the memorable feast of the renovation of the mosoc-nina, or sacred fire. On the day of the equinox, the Inca waited, accompanied by the priests and principal people of his court, at the entrance of the chief temple for the rising of the sun, and by means of a metallic mirror, called Inca-rirpu, or the Inca's mirror, concentrated its first rays, setting fire with them to a piece of cotton picked and prepared for the purpose. This substance was carried while burning to the temple, where the sacrifices and offerings to the sun were made, and afterwards it furnished fire to all the houses.

The Inca was accustomed to distribute to those who assisted him sacred bread (cancu), and chicha, a drink made from fermented maize. Finally, the feast was concluded with dancing, music, and general rejoicing.

In the spaces I have allotted to this month, in the first there are three small strokes on the rim, something like a small altar, a large circular body which may represent the sun, and the concave mirror for collecting the sacred fire from the sun; in the other a square, oblong, and two circular figures, the upper one being the largest.

5. April, Arihua, meaning an ear of maize, the grains being of various colours. In this month began the maize harvest, accompanied with dancing, music, and copious libations of chicha. Premiums were proposed for those who met with certain colours determined beforehand in the grains of the full ears. He who deserved the premium was celebrated by the people. This was invented so that they should go gaily to their work in the fields in the hope of gaining prizes.

Here is a face with an angular projection to the right, to the right also two inches.

6. May, Aymurray, or harvest of maize and its conveyance to the public granaries. The end of the harvest they celebrated clothed in gala dress, with music, chicha, and sportive games. They began to pull up the stubble preparatory to digging the earth.

Here we have the sun's face, a diamond-shaped figure, probably meant for Venus, to the left, and a similar one underneath.

7. June, Inti-Raymi. The sun's third festival. They rested from labour and gave themselves up to pleasure. I have allotted a small space containing a star, or it may be Venus, in two horizontal lines. Then come two blank spaces, another space containing one large and one small circle, something like the arrangement for March, and two longitudinal ones.

8. July, Anta-situa. Anta, copper; the fourth festival. Dressed in court robes, the troops performed exercises with their polished arms of copper, celebrated their feasts, and went about with noisy music, accompanied by the people, drunk and dancing. Also called Chachua, or the month of noise. They cultivated the land, and prepared it for sowing, emptied chicha into the aqueducts and rivers, hoping to gain by this liberal sacrifice sufficient water for their fields. Here is a sun, Venus to the right, a star below, and a square in the corner, containing two small circles.

9. August, Ccapac-asitua. They continued the feasts of the preceding month, and with greater splendour. They began at this time to sow maize, potatoes, etc., and practise singular ceremonies in order to expel beforehand epidemical diseases.

Here we have an oblong figure, a curved one, an angular figure, like the metal end of an arrow denoting the arms of copper: three little strokes; two longitudinal lines crossed by two small lines like a ladder with two bars.

10. September, Umu-Raymi.—In this month took place the enrolling of those liable to be taxed, and the verification of the prior register.

Here are two spaces, one with a small circle, half-moon, and

two curved lines; in the other, a star-like figure, a small circle, and two lines.

11. October, Aya-Marca; from Aya, dead.—Solemn feasts were celebrated for the dead, and it was customary to visit the sepulchres, and leave in them food and drink.

Here is a sort of cranium, and the quarter of a moon.

November, Ccapac-Raymi.—Here there is a sun, Venus is to the left, and a star underneath. The royal and great festival of all. This was the last month. The feasts and dances, after excessive joy, degenerated into drunkenness and licentiousness.

Plays were represented, composed by the learned persons of the royal family; one in particular has been preserved; a portion of which will be found in Markham's *Cuzco and Lima*. It is called "Ollantay, or the Severity of a Father and the generosity of a King," composed about the beginning of the fourteenth century. The following is a portion of a speech by the high priest of the Sun:—

> "O living Sun! I watch thy course
> As thou movest downwards in the heavens:
> For thee are now preparing
> A thousand sacrificial llamas,—
> Their blood shall flow for thy glory.
> For thee, too, are gathered the herbs of the field.
> Glory to thee, O ever-living Sun!"

A specimen of one of their sonnets is as follows:—

> "My song
> Will lull thee to sleep.
> I will be here, my love,
> And watch over thee."

The small compartments on either side of the apparently triangular gateway at the top, with something like two holes in the inner uprights, as well as the two empty spaces at the bottom, may be intended for the puchuc-quilla, or fourths of the moon remaining over. On the top side of the triangular gateway are three horizontal lines, and something like a column, on the other side three horizontal lines and two circles.

We have seen that the Mexicans and Central Americans had elaborate circular calendars; the Chibchas of Bogotá had particularly a pentagonal one; of the other natives of America I

have been unable to find that they had any such object, except this of the Inca Peruvians. It is the first I have seen or heard of. I would suggest that it would be attached to the breast of an Inca, or priest of the Sun, when performing sacred duties, also to refer to in connexion with their observations of the shadows of the gnomons.

The Peruvians had temples to the sun, moon, and stars; the movements of the planet Venus were carefully watched. In the Temple of the Sun, this luminary was represented by a human face, with rays proceeding from it of gold and precious stones. The moon was of silver. In the roof of the Temple of the Stars these were of silver on a blue ground, some of which they adored.

As to the constellations of the Peruvians, I offer the following list:—

1. The Pleiades - - -	*Collyur*, or *Oncoy Collyur*.
2. Southern Cross - -	*Calu-chillay*.
3. The Chair - - -	*Chacana*, as the name of a star.
4. The Jaguar - - -	*Chuquin-Chuncay*.
5. - - -	*Topar, Tarca*.
6. The Milky Way, or Star-dust -	
7. - - -	*Mircu*.
8. Taurus - - -	*Misqui-quicay*.
9. The Jaw-bone of the Danté -	*Ahauracaqui*.
10. The Hyades - - -	*Huagra-una*.
11. The Cross-bearer - -	*Calchillay*.
The Star *a* Lyræ - -	*Urcu-coyllur*.
A malign Star - - -	*Tapia-coyllur*.
A Star influencing sons to eat their fathers - -	*Mamanmirical*.
A Comet—the Tail called Sand	*Accochinchay*.
An Eclipse - - -	*Yutip-huañu*.

The Peruvian empire was divided into four parts:—

To the north was—Tahua-suyu.
To the south was—Colla-suyu.
To the east was—Anti-suyu.
To the west was—Conti-suyu.

Instruments.—The first the Peruvians had we may call the pillar for observing the times of the solstices, and which would give them an E. and W. line at the rising and setting of the

sun, and a meridian line at noon. The second, the arrangement of the eight towers on either side of the hill of Carmenca, for determining the various periods of the year by the rising and setting of the sun. The third, the engraved gold disk, most probably an annual calendar.

Osery, the companion of Castlenau, observed on the top of a mountain at Ollantaytambo a monument supposed to be for astronomical purposes, composed of a square building, each side having three windows; unfortunately his murder on the Marañon by his guides prevents us deciding if the position of the twelve windows corresponded with the sun's risings, during the twelve months of the year. I come now to the recently discovered

Peruvian Telescope Tube.—Humboldt, in his *Cosmos*, says, for more than nineteen centuries the naked eye only was used; *long tubes* were used by the ancients; some having eye and object diopters, or narrow apertures attached to the extremities. Of such a character is the one I have described, said to have been found in a *tumulus* in the United States.

Nature would give canes of all sizes and lengths which could be looked through. The *sarbacane* or blow-gun of the tropical portions of the new world, generally a hollow cane, was used for blowing pellets or arrows by the Red man at a very early date. I have seen some six and eight feet in length.

This brings me to what I conceive to be a most interesting relic—it is of Peruvian origin, namely—the hollow tube for astronomical observation.

In January, 1864, Mr. David Forbes, the eminent chemist and geologist, called on me on his return from South America, and seeing I was engaged on the astronomical doings of the men of the new world, sent me the tracing, from a drawing of full size of a nude figure in silver he but lately obtained in Bolivia. It is two inches and a-half in height, on a flat pointed pedestal an inch and a-half long; in the right hand it has the mask of a human face; but in the left a *tube* over half an inch in length, the narrow part placed on the left eye, in a diagonal position, as if observing some celestial object. This is the *first* specimen of a figure in the act of looking through a

hollow tube and directed to the heavens found in the new world; for we cannot suppose that the Peruvians had anything nearer in the shape of a telescope.

It was found in a chulpa or ancient Indian tomb at Caquingora, near Corocoro (17° 15′ S., 68° 35′ W.), in Bolivia. It may be rather of Aymará than of Quichua origin.

The Aymarás take account of time, and knew some of the movements both of the sun and moon. They counted their years from ten months to ten months. They called the year *mari;* the moon or month *alespaquexe;* and the day *auro.*—From Markham's trans. of *Cieza de Leon,* cap. ci. p. 336.

On the Early Belief of the Peruvians and the "Free-thinkings" of the Eleventh and Twelfth Incas.—In early Peruvian traditions (long before the Inca dynasties), Con is spoken of as the maker of the world. Man became wicked when Con turned human beings into black animals.

We now hear of Pachacamac, in some way or other descended from Con.

This Pachacamac created the present human race. With the advent say of Manco Capac, he took the following view, that he and his sister-wife, were the direct offspring of the Sun and Moon, and although there were traditions of Con and Pachacamac, the idea was instilled into the Inca Peruvians that they were originally descended from the Sun.

However, the eleventh Inca Tupac Yupanqui came out with what Humboldt calls *free-thinking* ideas—that the Sun was governed by a greater power, and his son Huayna Capac imbibed some of the free-thinking spirit of his father.

Humboldt (*Aspects* ii, 316) says, "The great but for a child of the Sun somewhat free-thinking Huayna-Capac. The nightly absence of the Sun excited in the Inca many philosophical doubts as to the government of the world by that luminary. Blas Valera noted down the remark of the Inca on the subject of the Sun!" "Many maintain that the Sun lives, and is the maker and doer of all things; but whoever would complete anything must remain by what he is doing. How many things take place when the sun is absent; therefore he is not the original cause of all things. It seems also doubtful whether

he is living ; for though always circling round, he is never weary. If he was living, he would become weary, as we do ; and if he was free, he would surely move sometimes into parts of the heavens where we never see him. The Sun is like an animal fastened by a cord so as always to move in the same round ; or as an arrow, which only goes where it is sent, and not where it chooses itself." (See also Garcilasso, *Comment. Reales*, P. 1, lib. viii, cap. 8, p. 276.) *"The view taken of the circling round of a heavenly body, as if fastened to a cord, is very striking."*

Conclusion.—Following the authors of *Types of Mankind*, with whom I perfectly agree, inquiry into the astronomical knowledge of the Red Men, their arithmetic, division of time, names of months and days, shows that their whole system was most peculiar; and if not absolutely original, must antedate all historical times, since it has no parallel on record.

Almost all the nations of the new world appear, in their first attempts to compute time, to have resorted to lunar months, which they afterwards adjusted in various ways, in order to make them correspond to the solar year.

What is remarkable is, that the calendar of Peru affords proofs, not only of astronomical observation, and of a certain degree of astronomical knowledge, but also that their origin was independent of that of the Mexicans and Muizcas of Bogotá.

If, then, the Mexican, Muizca, and Peruvian calendars were not the result of their own independent observations, we must suppose a triple importation of astronomical knowledge.

Assuredly, then, the astronomical knowledge of the aboriginal Americans was of domestic origin; and any of the few points of seeming contact with the calendars of the old world, if not accidental, must have taken place at an exceedingly remote period of time. In fact, whatever may have come from the old world was engrafted upon a system itself still older than the exotic shoots.

But if it still be contended that astronomy was imported, why did not the immigrants bring in an alphabet or system of writing, the art of working iron, mills, wheel-barrows—all unknown in America; or, at least, the seeds of

rice, wheat, oats, barley, etc. of their respective botanical provinces? Alas! sustainers of the *unity* doctrine will be puzzled to find one fact among American aborigines to support it.

NOTE.

At p. 229, I have given an examination of the Aztec stone zodiac; and should the photograph of it, deposited with the Anthropological Society, be referred to, the following will facilitate its explanation. The letters will be found on the engraving given by Gallatin; the numbers and italics are mine.

1. Supposed to represent the Sun.
2. 2 *Acatl*, (Reed).
3. 20 Indications on the Ears.
4. 6 Circular and Oval Indications.

A. 4 *Ocelotl*, (Jaguar).
B. 4 *Ehecatl*, (Wind).
C. 4 *Quiahuitl*, (Rain).
D. 4 *Atl*, (Water).
E. F. Symbols of the Astrologers.
h. Two Sets of 5 Indications = 10.

5. *Ehecatl*, (Wind)?
6. *Tepactl*, (Silex)?

H. 10 *Ollin*, (22nd September, 1st Year of the Cycle).

7. 5 Bent Figures; may have to do with 10 *Ollin*.
8. Circular Figure.

M. 2 *Ozomatli*, (Ape). 22nd March.

9. 20 Symbols of the Days of the Month.
10. Indications, said to stand for the 260 days of the year of 13 months of the Priests; I only make 190 Indications.

R. 8 Supposed Sun's rays. They may rather stand for the eight cardinal points.

L. 8 Supposed Subdivisions of the Sun's rays. These with the above seem to me to represent the 16 divisions of the Mexican day. I describe *L.* (which looks to me like *Acatl* (reed) as follows.

a. Six sets of bent figures, 10 in each; two below, with 5 in each = 70.
b. Six circular indications in fives = 30. No similar indications in the bottom one.
c. Bent figures = 18 and 2 at bottom = 20, and two circles.
d. A band.
e. A circle on each side of the band.
f. A circle on L. at the top.

11. The twelve objects supposed, by Gama, to be collections of clouds. They look to me like atl (water).

g. Gama thought these might represent mountains. There are 12 sets of 4 = 48.

T. Symbol of the year 13 Acatl (26th year of the Cycle).

12. The supposed Milky-way of Gama. They look to me (the 20 clear indications) like repetitions of the 20th month Xochtli (flower, plant, or tree).
13. Two single divisions at top.
h. Band.
14. Two single divisions at bottom. The collection of dots 12, 13, 14, seem to make up 260, or the days of the year of the priests.
15. Twenty-four perpendicular lines, with 12 circles on their summits.
16. The small diagonal lines all round the outer portion of the Zodiac, may represent the Sun's rays.
17. Two lizard-looking figures, with dots.
18. Profile of heads, said to represent the First Lord of Night.
19. A narrow circle near the edge with, say, 130 indications of dots. Twice this number would make 260.
20. Circle of Ovals in the very edge, 72 or 73 (73 cycles of 260 days make a cycle of 52 years).
21. Look like supports to the outer portion.

P. P. Q. Q. S. Y. X. Z. are the places for the eight holes, vertical to the stone. According to Gama these are for the introduction of the Gnomons, on which cords may have been stretched. In Gama's skeleton diagrams the holes X. Y. are placed at the bases, or rather at the ends of the circles 15.

P. P. Opposite to upper part of rim of the third plant—like figure.

Q. Q. Opposite upper rim of third plant-like figure from the bottom.

S. Y. Opposite second teeth of the lizard figure. Gama supposed that this Zodiac stood upright and facing the south, that it only represented six months of the year, and that there was another for the other six months facing the north. I think it rather probable that it lay flat, and served for the whole year.

VIII. *The Neanderthal Skull: its Peculiar Conformation explained Anatomically.* By Joseph Barnard Davis, M.D., F.S.A., F.A.S.L., Foreign Associate of the Anthropological Society of Paris, etc.

In the recent curious investigations, which are tending by fresh and more convincing evidence to push back to remoter periods man's autochthonous residence upon the earth, no human relics which have been brought to light have excited greater attention, or given rise to more speculation and discussion than the Neanderthal skull. Its remarkable forms have been supposed to afford a basis for that approximation to pithecoid conformation which appears to be much wanted for the better support of ingenious doctrines under consideration.* Possibly it may have proved an allurement and a snare to the very accomplished men whose studies had prepared them for such a phenomenon. To one who has formed only a modest estimate of the worth of cranial forms, and who hesitates to put faith in the value often supposed to be inherent in them, the use of the Neanderthal calvarium as a key to unlock the hidden mysteries of nature, has been more surprising than convincing. In the present short communication it is not proposed to follow the very able and profound men of science who have treated of this skull in their researches, but merely to speak of the true meaning of the forms of the relic itself. If this can be definitively established, a great deal which has been based upon former estimates of them will fall to the ground, without the need of refutation; and the writer will be spared the, for him, improper position of pointing out the instability of the views of those far more thoroughly versed in these studies than he is.

At the period of the appearance of Mr. Busk's excellent translation of Professor Schaaffhausen's Memoir on the Nean-

* The long-sought "missing link."

derthal Skull, to which he appended some remarks of his own*, my attention was attracted to the subject, by finding that I had in my possession a calvarium which struck me as having a great resemblance to this famous specimen, No. 1029 of my collection. It came into my hands some time ago with many other skulls which had belonged to a man who excited some attention in his day—Mr. Deville, the phrenologist, of the Strand, London. There is no history whatever attached to it, and nothing is known further of its origin. Yet there is no reason for thinking that it is anything more than a calvarium of a modern Englishman, which has been preserved for the singularity of its conformation; and it was probably a puzzle to its former owner. Soon after the appearance of Mr. Busk's translation, he favoured me with the briefest possible visit, when I had the opportunity to show him my specimen, and to place it in his hands. Shortly afterwards he exhibited it at one of the Soirées of the Royal Society of London, but I am not aware that it excited any particular attention.

In the investigation of skull-forms, for whatever purpose they may be studied, due weight should be given to every kind and degree of deformative influence. Of these influences there are various kinds—morbid, developmental, artificial, posthumous, of different species. None are more fertile in producing deformities, often of a very curious and bizarre appearance, than *synostosis*, or the premature ossification of one or more of the sutures between the cranial bones. The calvarium is liable to the invasion of this deforming influence from the earliest period of life. From it results, immediately, an arrest of the development of the brain in the position of the suture itself, and, remotely, an increased development at some other point where the sutures are open and allow expansion. A more precise law has been educed by the investigations of Professor R. Virchow, that, by the too early ossification of a suture, the development of the skull is arrested in the diameter perpendicular to that suture.† This is a well-established general law, but yet, I believe, liable to exceptions.

* *Natural History Review*, p. 155, 1861.

† It is not necessary to refer to more than the three principal writers on

It may be asked, what are the conditions of the sutures in the Neanderthal calvarium? and is there any sign of premature ossification, such as commonly alters the form of the skull? In Professor Schaaffhausen's description of the Neanderthal calvarium, it is stated that "the coronal and sagittal sutures are on the exterior nearly closed, and on the inside so completely ossified as to have left no traces whatever, whilst the lambdoidal remains quite open."* The coexistence of sutures fully ossified, and others quite open, at once shows that these appearances are not those resulting from age or senile obliteration, but arise from an irregular development, or premature and abnormal ossification. By the politeness of Professor Huxley, I have been permitted to see the photograph of the side of the Neanderthal calvarium, sent him by its owner, Professor Fuhlrott, of Elberfeld. In this photograph there is no appearance of the coronal suture, or of any suture in the temporal region, although the lambdoidal is very obvious. Professor Huxley was good enough to examine his cast of the calvaria, and to inform me that the traces of the coronal suture "are so faint that I can well understand their absence in the photograph." Lastly, Professor Fuhlrott himself has been so exceedingly kind as to comply with my request, to make a close investigation of the state of the sutures, and has favoured me with the following results:—

"1. The *coronal suture*, on the external surface of the skull, is only obscurely perceptible on the left side for three inches, and on the right side for two inches, from the anterior extremity of the sagittal suture. Descending from these points, as well as on the internal surface of the skull, it has been entirely ossified, and is tracelessly vanished. The external coronal suture is, notwithstanding, found to be indicated in *all the figures* of the

synostosis of the bones of the cranium. Virchow, *Gesammelte Abhandlungen*, ii, p. 891, 1856. Lucae, *Zur Architectur des Menschenschädels*, 1857. Welcker, *Ueber Wachsthum und Bau des menschlichen Schädels*, 1862. *Ueber zwei seltnere Difformitäten des menschl. Schädels*, 1863. To these illustrious anatomists the great merit is due of having devoted assiduous attention to the study of synostosis of the cranial bones, and of having given the subject the fullest elucidation. The law laid down by Professor Rudolf Virchow is expressed at S. 936. Professor Hermann Welcker has said of it, "Ich betrachte es als eine eben so unerlässliche wie dankbare Aufgabe unserer Wissenschaft."—*Wachsthum*, S. 14.

* Mr. Busk's translation of his work. *Nat.-Hist. Rev.*, i, p. 157.

Neanderthal skull, given in different works, even in that of Professor Huxley (*Man's Place in Nature*, p. 139)*. 2. The *sagittal suture* is both externally and internally untraceable, from ossification; still, on the outer surface, its direction is marked by a gentle depression. 3. The *lambdoidal suture* is very plain, both externally and internally, and runs in the normal manner on the right side to the *pars mastoidea* of the temporal bone, and here, so far as it is formed by the parietal bone exists in a perfect state, whilst on the left side it appears somewhat defective. 4. Of the *squamous suture*, the middle portions on both sides of the skull are obviously present, upon the parietal bone. 5. Of all *the other sutures*, namely those taking their course on the points of examination on the frontal, parietal, and squamosal bones, there is nothing to be found, even no partial indication, 'einseitige Andeutung.'" This careful account of the state of the sutures in the original calvaria, which I owe to the great attention of its polite owner, comes fully to confirm the impression I had been *previously*

* I regret that I am not able to give a correct figure from the photograph of Dr. Fuhlrott, which would have rendered it unnecessary to point out the defects of former representations. In the plate accompanying Professor Busk's translation of Schaaffhausen's *Memoir*, the coronal suture is depicted as abbreviated in the temporal region, in the profile, fig. 1. The lambdoidal suture is wholly absent in this figure. In fig. 2 (the vertical view), the coronal is represented as quite in its patent, normal state of serration; and the lambdoidal is seen less distinctly (*Nat.-Hist. Rev.*, vol. i, pl. 4, 1861). In the outline cut of profile in the *Memoir* of Mr. C. Carter Blake, the coronal suture is made to run across the middle of the calvaria, and a little way down below the *linea semicircularis*; and there is no trace whatever of the lambdoidal suture (*The Geologist*, vol. v, p. 206, 1862). In the profile given by Professor Carl Vogt, the coronal suture is delineated as quite distinct, very nearly as far as the *linea semicircularis*; whereas in the bone itself it is only "obscurely perceptible" for three inches on this side. In the vertical view of this author, this suture is represented as running entirely across the calvaria, without any obliteration whatever. In both figures the lambdoidal is seen to be quite open (*Vorlesungen über den Menschen*, B. ii, S. 74, 75, 1863). In the profile figure of Sir Charles Lyell's work, there is an entire absence of all trace of the coronal suture, and the lambdoidal is represented very faintly, too faintly (*Antiquity of Man*, 1863, p. 82). It may be added that all these figures allow the sagittal suture to be obliterated, and the vertical view of Professor Vogt furnishes the depression described by Dr. Fuhlrott. Lastly, in the lithographic plate accompanying Professor Wm. King's article, the coronal suture is represented on the right side, in the profile, as descending to the *linea semicircularis*, and, in the vertical view, as in its normal open state, the lambdoidal in both figures being patent; but, at the same time, the sagittal also appears as open. (*The reputed Fossil Man of the Neanderthal, Quart. Journ. of Science*, 1864, p. 88.)

led to entertain from a study of the subject, that the Neanderthal skull is simply an abnormal example, and owes its peculiar forms to synostosis of the cranial bones before the calvarium had attained its full development.

The premature ossification of the sutures of the temporal regions, the sides of the coronal suture, and those surrounding the alisphenoid, prevents the proper development of the anterior lobes of the brain, and impels the cerebral substance backwards. In the skull itself it gives rise, immediately, to a narrow, low, contracted frontal region, and, indirectly, to the expansion of the calvarium in a posterior direction, where the sutures are open and allow of cerebral growth. In fact, it influences the frontal region pretty much in a reverse manner to the presence of a permanent frontal suture, which facilitates the development of the anterior lobes of the brain and thus occasions an increased size of the skull in this part.* The premature ossification of the sagittal suture operates in a similar manner. It contracts the calvarium transversely, often occasions a *carina*, or ridge, in the situation of the closed suture (sometimes, as in this Neanderthal example, a depression), and compels the brain to grow and push outwards the cranial bones at some other point, where there is less resistance —commonly in the frontal and occipital regions, so as to give rise to the *scaphocephalic* calvarium. But in cases in which the sagittal suture is not closed, the obliteration of the sphenofrontal, parietal, and squamosal sutures, which often carries that of the sides of the coronal with it, I am satified gives rise to an elongation of the calvarium. To this we may aptly apply Dr. Welcker's designation *dolichocephalus synostoticus*. This ossification has a material influence (sometimes with that of the sagittal suture, where it operates most potently, and sometimes without), in producing the dolichocephalism of the skulls

* The *brachycephalia frontalis* of Professor Welcker, who has treated this subject very satisfactorily, *Wachsthum*, S. 87. The figures on Tafel v of Professor Lucae's *Architectur* may be referred to for a certain degree of confirmation. The forehead is greatly depressed, with a groove above the large superciliary ridge. The ossification of sutures is not precisely the same as in the Neanderthal example, but they agree in the principal synostosis, namely, that which has obliterated the sides of the coronal suture.

derived from the long and chambered barrows of the ancient Britions: for it is a remarkable fact, not yet explained, that these skulls are found to be specially obnoxious to synostosis.*

In the application of these remarks to the famous Neanderthal calvarium, the first striking peculiarity that demands attention is the great magnitude of the frontal sinuses, and the enormous ridge of bone covering them, which are not affected by irregularity in the ossification of sutures. The size of these sinuses differs greatly in different persons, and to have them remarkably large is merely an individual peculiarity.† Some living persons, among Englishmen, might be brought forward exhibiting this peculiarity. And in the example figured No. 1029 the same peculiarity will be seen to exist. Still it should be remarked that the unusual depression of the frontal bone above the superciliary ridges gives an exaggerated prominence to this part in the Neanderthal calvarium. This depression, only slighted diminished in degree, will be seen in the example figured. The fact of its being less is at once explained by the open state of the sutures surrounding the alisphenoid, all of which appear to have been prematurely ossified in the Neanderthal skull.

It is precisely this early synostosis of the bones forming the temporal regions that has prevented the development and arching of the frontal bone, and given rise to the *great* depression and flatness of this bone, one of the most remarkable features of the Neanderthal calvarium.‡ Indeed, it is the enormous superciliary ridge and the depressed forehead which have led so many excellent observers to the verge of a declination

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* There is a probability that the earliest examples of human crania obtained from these barrows were synostotic, and also deformed in the same way as the Neanderthal calvarium. At all events, one of the most striking peculiarities, which impressed Sir Richard Colt Hoare and his friends with the greatest force, was the "*fronte valde depressa.*". See *Archæologia*, vol. xix, p. 47.

† "Ast sinus frontales, tam quod ad magnitudinem et extensionem, quam quod ad figuram, mirum quantum in diversis capitibus variant. * * * in aliis ad anteriora magis protuberantes, ut arcus superciliares sub fronte ipsa multum exstarent."—Blumenbach, *De Sinibus Frontalibus*, 1779, 4to, p. 3.

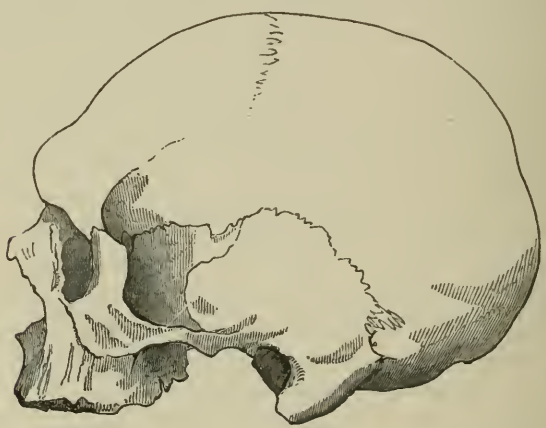
‡ That is, in addition to the ossification of the coronal suture. This latter alone gives rise to the *Platycephalus*, Flathead, of Virchow and Lucae. The *Tapeinocephalus* of the latter is defined, "Synostosis between the frontal bone, the parietal bone, and the temporal bone" (*Opera citata*).

towards pithecoid forms. In these particulars, and in the great gap separating it from the body of the frontal bone, the Neanderthal calvaria may be said, at first view, to be suggestive of the crest of the gorilla. But there is no real resemblance between the two; for the latter crest is a solid buttress of bone, and does not correspond to the hollow superciliary ridge. It will thus be seen that there is nothing either of a simious character, or that might not have been expected in the low forehead of the Neanderthal skull, in which the brain had to grow and expand under a plate of bone which appears to have been in a great degree in one solid piece. It was impossible to raise this plate of bone upwards; and the result, as will be seen, was a development in another direction. In the middle region of the calvaria, the sagittal suture being closed, the contained cerebral substance could only expand at the sides, in the situation of the squamous sutures; and here the Neanderthal calvarium seems not to lack development. But in the posterior region its greatest expansion took place, precisely because in this part was the open lambdoidal suture, which admitted of the growth of the brain. In the figures of this imperfect calvarium the superior occipital scale is seen to be bulged out, and the whole of what remains of the occipital bone is full and large—the compensatory result for the contracted anterior regions.

The extreme length of the Neanderthal calvarium is given by Professor Huxley, and is eight inches, which is a very unusual length. In skulls in which such a length occurs, it is most frequently the result of synostosis. That such is the case in the Neanderthal example there is not any doubt. This feature is the unequivocal effect of premature ossification of longitudinal sutures.

I have no intention to enter into the question of the antiquity of the Neanderthal calvarium, a question which rests on other grounds than the anatomical considerations I have been led to discuss. It seems highly probable that an extreme antiquity belongs to the remains; but the peculiar conformation which the calvarium presents cannot justly be adduced as an argument in favour of this antiquity, for synostotic calvaria of like

conformation, and only differing in *degree*, or in some modification of form, do occasionally occur, and that among modern races. I have confined myself to the anatomical question of the meaning of the peculiar form of this Neanderthal example, which I am satisfied is the result of synostosis, and is not in any way to be regarded as a race-character. Hence I am constrained to differ altogether from the learned Bonn Professor, who, in his able memoir, which gave the earliest impulse to the fame of this calvarium, stated his first conclusion, from anatomical examination, to be, "That the extraordinary form of the skull was due to a natural conformation hitherto not known to exist, even in the most barbarous races."* On the contrary, I should say that the form of the calvarium is owing to an abnormal development, which is not, and cannot, be con-



Calvarium of Englishman, No. 1029 (*nearly one-third the natural size*). The coronal, lambdoidal, and sagittal sutures are ossified. The spheno-malar, -frontal, -parietal, and the squamosal sutures are all quite open.

sidered a race-character at all, but which is not in one degree or another, an unfrequent occurrence among all races, and that this abnormal development presents a great variety of degrees and modifications, according to the particular combinations of sutures which are ossified. It is probable that there might be

* Nat.-Hist. Rev. vol. i. p. 155.

much difficulty in pointing out any individual calvarium of exactly the same form as the Neanderthal example, whilst there is not the least in finding those whose forms have been modified in various ways by the same cause, and which resemble more or less closely the Neanderthal skull. As already stated, it was soon after the appearance of Mr. Busk's translation of Professor Schaaffhausen's memoir, that I was impressed with the resemblance of a calvarium in my own collection to that of the Neanderthal cavern. And it has been the study of this specimen that has led to the attribution of the peculiar forms of the latter to their true cause. .

This enormous example of a modern English calvarium, which has undergone modifications of its natural form by abnormal synostosis, may be briefly described. It is that of a man who has attained the middle, if not a later period of life—perhaps sixty years. It is of unusual dimensions, thick, large, and heavy, weighing in the absence of all teeth, 40½ ounces av., or 1146 grammes. It has an immense supraciliary ridge running entirely across the frontal bone, and a low, receding forehead behind it, an obvious depression being seen in the line of the profile connecting the two, as in the Neanderthal specimen. Although the vertex is not high, the calvarium is wide in the interparietal diameter, and both it and the Neanderthal one are full in the supraoccipital region, and long. It measures eight inches in diameter from a point just above the supraciliary ridge to the external occipital protuberance; hence it is rather longer than the Neanderthal example. Its other measurements, given according to the method I have followed,* are these:—

A. Internal capacity in ounces of dry Calais sand, 94 ounces avoirdupois = 113 cubic inches, = 1851 cubic centimeters.			
B. Circumference	22·8	inches =	578 millimeters.
C. Fronto-occipital arch	16·6	„ =	421 „
a. Frontal portion	5·8	„ =	147 „
b. Parietal portion	5·2	„ =	133 „
c. Occipital portion	5·6	„ =	143 „
D. Intermastoid arch	16·9	„ =	429 „
E. Length	8·0	„ =	202 „

* This method is fully described in the *Crania Britannica*, chap. viii.

F. Greatest breadth, which is intertemporal	6·3 inches	= 159	millimeters.
a. Frontal	5·1 „	= 130	„
b. Parietal	5·5 „	= 140	„
c. Occipital	4·8 „	= 122	„
G. Greatest height	5·7 „	= 145	„
a. Frontal height	5·3 „	= 135	„
b. Parietal height	5·5 „	= 140	„
c. Occipital height	4·9 „	= 125	„
I. Face, width of	5·9 „	= 149	„
J. Ratio of E length, as 100, to breadth		78	
K. „ „ „ to height		71	

This enormous calvarium does not agree very closely in its form with the Neanderthal example; it is not so depressed in the frontal and vertical regions; but it owes its peculiar conformation to precisely the same cause—irregular and premature ossification of the sutures. And the points in which it agrees, as well as those in which it disagrees, with the Neanderthal calvarium, admit of ready explanation by a close reference to the points of obliteration of sutures in which they agree or differ. In this example, the coronal suture is not at all to be traced externally for the lower half of its course on each side, and even the middle portion is almost entirely effaced. Internally there is no trace of it remaining. But the sutures surrounding the alisphenoids are all quite open. Upon this difference from the Neanderthal fragment is based its deviation from the greater, extreme depression of the frontal in the latter. The premature ossification of the coronal suture has prevented the growth of the anterior lobes of the brain upwards and laterally, to a certain extent—but not wholly, because the side sutures below were open. And pretty much the same has occurred in the middle region of the calvaria, where the sagittal suture is firmly ossified, whilst the squamous sutures are both of them patent and free. Hence the brain has been arrested in developing itself vertically, and would, as is the usual course in such cases, have been impelled backwards, so as to elongate the skull considerably, had it not been for the complete ossification of the lambdoidal suture. From this condition its expansion has been below in the temporal regions, where the squamous sutures are open in all their course.

With respect to the capacity of this calvarium, which is represented by 94 ounces of sand, equal to 113 cubic inches, or 1851 cubic centimeters; although it presents a frontal region so depressed or low in development, this capacity is unusually great, and the amount of cerebral matter contained in the skull must have been much above the average. The weight of the cerebral substance contained in it, after making an allowance of 5 ounces for the membranes and fluids, would have amounted to 63 ounces, or 1785 grammes.

For a clearer estimation of these measurements, it may be added that Professor Morton found the mean average capacity of the skull in his Teutonic Family to be 93·5 cubic inches, and that the capacity of the largest skull in his great collection only exceeded this (No. 1029) by one inch—it was 114 cubic inches, this is 113*. The careful observations of Dr. Peacock led him to the conclusion that "the encephalon in the adult male weighs on an average 50 oz. 3·25 dr."†, or nearly 13 ounces less than in this example. Again, 1785 grammes would stand in the fifth place from the top in the late Professor Rudolph Wagner's long table of the weight of the brain in 964 instances, arranged from the highest to the lowest,—the brains of Cuvier and Lord Byron and two diseased brains alone standing above it‡. This shows how erroneous it would be to conclude, from the great depression of the frontal and vertical regions in a synostotic skull, that the individual has been endowed with a cranium of small size, or had a deficiency in the mass of his brain. And it will be equally seen, from what is declared, on the best authority, with respect to the Neanderthal skull, that the supposed evidence of unparalleled low and imperfect development of the brain, reducing the Neanderthal man below the lowest existing human race in cerebral development, and all its ennobling results, is entirely without foundation. Professor Huxley states the horizontal circumference to be 23 inches, which will admit of a slight allowance being made

* Table of the Measurement of 663 Crania of various races and families of Man, Meigs's *Catalogue of Human Crania*, p. 17, 1857.

† *Tables of the Weights of some Organs of the Human Body*, 1846.

‡ *Morphologie und Physiologie des menschl. Gehirns als Seelenorgan*, 1860, S. 39.

for the inevitable swelling of the plaster cast, upon which his measure was taken, without reducing it below the large example now adduced, or 22·8 inches. Professor Schaaffhausen states that the capacity of the fragment, as it now exists, obtained by filling it with water, is equal to 1033·24 cubic centimeters, or 63 cubic inches. In its complete state, Professor Huxley considers that the Neanderthal calvarium "could hardly have held less than an additional 12 cubic inches." My own impression, resulting from the gauging of a considerable number of skulls (from one to two thousand), is that it would have held much more, probably 30 additional cubic inches at least. If so, the capacity would have been equal to the average of Morton's Teutonic Family.*

It is a proof of the extraordinary changes the calvarium may undergo in its form from synostosis, and forcibly confirms what I have already said, that no correct estimate can be formed of cranial conformation, unless close attention be paid to all the causes of deformation, among which synostosis holds a chief place. Had this attention been paid at first to the Neanderthal fragment, and had the true nature of its unusual forms been accurately determined, the greater part of the conjectural ideas to which it has given rise would not have been based upon such an abnormal example.†

The whole subject of the periods at which the sutures become obliterated in an abnormal manner deserves to be much more fully investigated. The cases in which there is the greatest resulting deformation take their rise in very early life, most likely always during intra-uterine life. I have seen an exceedingly strongly marked case of true scaphocephalism, in which every feature of the abnormity was present, in a child between seven and eight months old, and feel quite unable to receive the mother's testimony, that the boy's head was free from deformation at birth. So great an interference with the

* I perceive this view receives some confirmation from Professor Huxley's more recent experiments. *Nat.-Hist. Rev.*, July 1864, p. 445.

† It would scarcely be proper to pass by the very judicious and sensible remarks of Dr. Turner, which are quoted from a memoir I have not seen, in the last Number of the *Nat. Hist. Review*, by Professor Huxley, at pp. 441, 442, without recognising them fully.

natural form, as exists in the Neanderthal skull and in No. 1029, could scarcely have originated at a period later than fœtal existence.

I have probably been led to occupy too much attention with a subject already so fully discussed as the Neanderthal skull, of which Professor Huxley has observed, "it seems difficult to believe that there now remains very much more to be said".* I hope to be excused when it is recollected that I have confined myself almost solely to its *anatomical characters*. I am not aware that these have been before determined. But when determined, they may be regarded as sufficient to prevent much further speculation, if not sufficient to refute a good deal already put upon record.

Professor Huxley and Professor Broca have both, with much judgment opposed the notion that the Neanderthal calvarium has belonged to an idiot.† There is no adequate reason for

* A complete enumeration of those who have already treated upon the Neanderthal calvarium would be difficult. Besides the eminent men already referred to, it would include Professor Wyman, Professor Carl Vogt (Vorlesungen über den Menschen, ii. 74, 317), and the late Professor Rudolph Wagner who, in one of his last writings, expressed the opinion that it might be nothing more than the skull of a modern Dutchman. The learned Dr. Pruner-Bey maintained that the Neanderthal calvarium was pathological. It has now, I believe, been proved to be abnormal. Professor Schaaffhausen, the original describer of the remains, is about to make a further contribution on the subject, in which he proposes to criticise the views of Professor Huxley.

† In No. 1046 of my collection, the microcephalic calvarium of a man of about 40 years of age, the case is different. The microcephaly is dependent upon premature synostoses; and, most likely, the ensuing idiocy; for although I know nothing of the history of the calvarium, its diminutive size leaves scarcely a doubt that it has belonged to an idiot. The coronal suture is entirely obliterated on the sides in the temporal regions, and in all the rest of its course wholly ossified; the sagittal is also completely ossified, leaving only slight traces at its anterior part; but there is no ossicle whatever, and the *foramina parietalia* are present; and the lambdoidal suture is firmly ossified in all the visible part. The temporal sutures, and those of the sphenoids are quite open. In this example the supraciliary bony ridge is much elevated, the whole frontal region very small and greatly depressed.

The measurements of this calvarium are:—A 56, B 18·5, C 13·5, a 4·5, b 4·8, c 4·9, D 13·6, E 9·3, F 8·9, a 4·2, b 4·1, c 4·9, G 9·1, a 4·3, b 4·4, c 5·7, I 5·9, J 7·3, K 7·8.—56 Ounces av. of sand is equivalent to 96·1 cubic inches, which is very far below the average cranial capacity of any known race. Being converted into cerebral substance, it is equivalent to 49·5 ounces av. of brain, from which should be deducted 4·5 ounces for the membranes and fluids; leaving the weight of the encephalon to have been only 345 ounces av., or 1027 grammes. A brain of this weight would stand on Rudolph Wagner's table between numbers 916 and 917, the lowest number of the table being 864.

denying the full powers of mind belonging to his race, to the Neanderthal man—at least as far as the size of his brain is concerned; and there is truly no other basis for an opinion upon this subject. In favour of the conclusion that he belonged to a very inferior race, such as the Australian, I do not see any evidence. Indeed, inquiries in this direction may be at once arrested, now that the true cause of the peculiar conformation of the Neanderthal calvarium has been pointed out and admitted. That the very ancient inhabitants of Europe, who had normal skulls, were much inferior in mass of brain, or other evidence of good cerebral organisation, I am led to doubt. At all events, taking the evidence as it stands, and the ancient Britons as a fair example of such primeval races, there is no ground for regarding them in this respect as inferior to many modern Europeans*.

POSTSCRIPT.

Since what precedes was written, I have had an opportunity to examine the osteological collection of the celebrated and accurate Soemmering, which is preserved in the Anatomical Museum of the University of Giessen. His attention has evidently been specially directed to anomalies of structure, as well as to morbid changes. He distinctly noticed the varieties in the sutures of the skull, as other anatomists have done, and the effects they produce in altering its form. One section of his Catalogue is entitled "Suturarum cranii varietates." In this Section he enumerates "148. Cranium puellæ venustissimæ Parisinæ viginti sex annorum. Sutura sagittalis obliterata," and adds, "hinc forma elongata." *Catalogus Musei Anatomici quod collegit Samuel Thomas de Soemmering.* 1830, p. 124.

Professor S. G. Morton fully recognised the effects of premature obliteration of the cranial sutures. In a communication to the Academy of Natural Sciences of Philadelphia,

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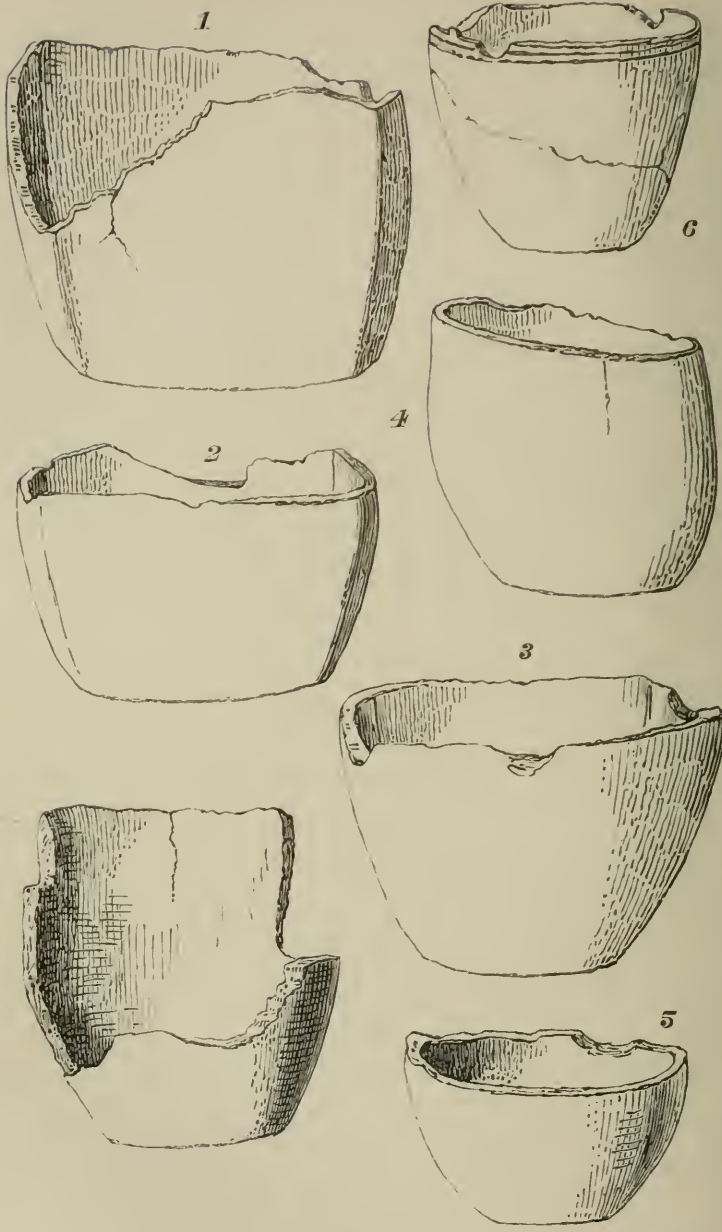
* *Crania Britannica*, chap. viii and ix. It should be explained that *cranium* is used for the whole of the bones of the head, in a complete state; *calvarium* for these bones, wanting the lower jaw; and *calvaria* for those of the vault of the brain-case alone. These distinctions are found to be convenient.

made May 6, 1845, he exhibited the skull of a Congo Negro (No. 1224 of his "Catalogue"), "who could not have been more than twenty years old; and yet," he says, "there is a total absence of the sagittal and coronal sutures, and the lambdoidal itself is not complete, while the temporal suture remains entirely open." After calling attention to a skull exhibited by him in 1841, nearly in all respects analogous, and the opinion he had deduced from it, that the principal functions of the sutures is to subserve the growth of the bones (he might have added, and of the brain also), which they do by osseous deposition at their margins. He concluded by showing, "that owing to the total absence of the sagittal suture in the Congo Negro skull, the lateral growth of the cranium has ceased at an early period of life; the presence of the lambdoidal suture has permitted of posterior elongation, and the squamous sutures being entirely open, the upward growth, corresponding to the lines of these sutures, is remarkably developed." *Proc. Ac. Nat. Sci. Phil.* Vol. I, Aug. 1841, and Vol. II, May 1845, p. 232; *Types of Mankind*, 1854, p. 303.

IX. *On the Discovery of large Kist-vaens on the "Muckle Heog" in the Island of Unst (Shetland), containing Urns of Chloritic Schist.* By George E. Roberts, F.G.S., Hon. Sec. A.S.L., etc.

My friend Mr. Edmonston, of Buness (Shetland) kindly forwarded to me in August last some human remains belonging to several individuals, discovered in a kist-vaen of unusual size, situated upon the crown of this hill in the island of Unst. The kist was displayed during an excavation made for the planting of a fishing signal, about a month back. At a depth of thirteen inches from the surface of the hill-side, which sloped down seawards, the labourers broke into a place of sepulture, bounded about with large upright flat stones, and enclosing a "large number of human skulls and bones." It appeared at first possible that these skeletons were those of a marauding party of Danes, who are traditionally said to have swooped down upon the natives of Unst, under the command of one Harold, whom tradition also records as having been slain near to the village of Haroldswick, and buried beneath a huge cairn of stones, still known as "Harold's Grave," and which lies very near to the spot beneath which this kist was found. Mr. Edmonston, with some probability, considered this burial-place to have been that of his followers; conjecturing also, from the position of the skeletons, that they were buried in a sitting position, and at a greater depth from the surface than they were found at, pluvial and other atmospheric agencies having degraded the surface of the hill-side since the time of their burial. But farther investigation disclosed fragments of rude pottery buried with the remains, which could scarcely have been the case had they been the bodies of enemies slain in battle. The hill belongs to the Earl of Zetland; and I would respectfully suggest to its noble owner that a careful investigation of



To face p. 297.

it, and also of the near-lying cairn of "Harold's Grave," would probably result in some interesting and valuable discoveries. Meanwhile our thanks are due to Mr. Edmonston and Mr. Gatherer of Lerwick for their courtesy in calling attention to it.

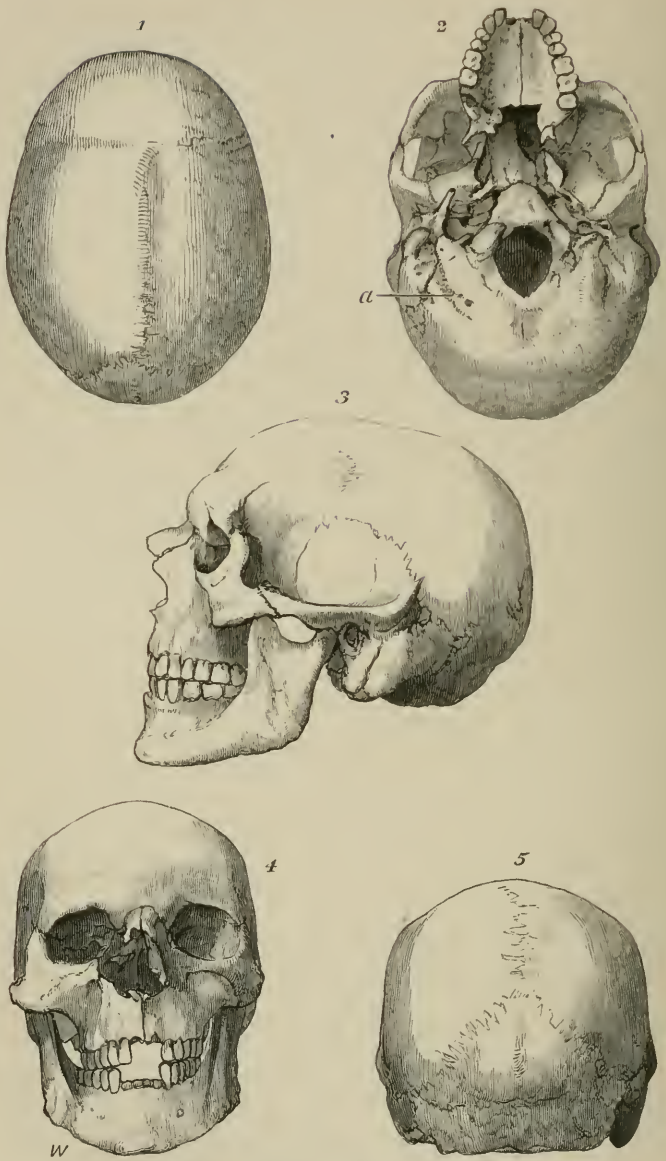
But the discovery to which I am about to direct special attention is one of much greater importance. Farther explorations beneath the surface of the Muckle Heog have resulted in the discovery of another and still more interesting kist.

This, Mr. Edmonston informs me, was a narrow chamber, formed with upright stone slabs, slightly smoothed, and covered with a "lintel" slab about three feet long and a foot wide. The contents of this kist were a skull, with lower jaw, some few bones of ox, and six "urns," or rather vessels formed for domestic uses out of a soft chloritic schist. These vessels are of different sizes and character. No. 1 is a flat-bottomed pot, with irregularly formed sides, from five and a half to seven inches in height, rudely bulging in parts, and having an unsymmetrical four-square outline. This pot is formed out of a chloritic schist, nearly as soft as "potstone" (a steatite); it is cracked and blackened externally from the action of fire, and appears to have been an ordinary boiling-pot of the tribe. No. 2 belongs to a different type. This is a tolerably symmetrical four-square vessel, thinner and more carefully shaped, flat-bottomed, and carved out of a finer-grained schistose rock. It presents no action of fire, and appears to have been but little used. The outline of the lip is that of a slightly-bulging, irregularly four-sided figure, measuring $5\frac{1}{2}$ inches in length and $5\frac{1}{4}$ in width. The sides taper downwards till the base presents an area of $4\frac{1}{8}$ inches in length and $3\frac{1}{2}$ in width. The height of this vessel is $3\frac{1}{2}$ inches. No. 3 is perhaps the rudest of the series. This pot, although only $6\frac{1}{2}$ inches long, $4\frac{1}{2}$ inches in height, and $4\frac{1}{2}$ in breadth, is in places nearly an inch in thickness. It is formed of a coarse schistose rock, somewhat harder than the others. No. 4 is a rude tub-shaped pot, nearly as thick as the last described, and of very heavy and uncouth character. The scoring marks of the tool which fashioned it are very distinctly visible upon it. The outline of its rim is irregularly oviform;

but it is certainly a more convenient form for grasping than the larger and more angular vessels. The height of this is $4\frac{1}{8}$ inches, its width $3\frac{3}{4}$, length $4\frac{1}{8}$. Stands well, and firmly, and does not appear to have been at all used.

No. 5 is a diminutive, oval-lipped vessel, of a form nearly approaching No. 3. It stands $2\frac{3}{4}$ inches high, is $4\frac{1}{2}$ long and 3 broad. No. 6 is interesting, from exhibiting the only traces of ornament which appear upon the surfaces of these rude vessels of a pre-historic people. Two indented lines, scored at irregular distances round the exterior of the rim, are the ornamentation of this vessel. Its height is $3\frac{1}{2}$ inches, width of rim 4 inches, length of rim $4\frac{1}{2}$, width of base 2 inches, length of base $2\frac{1}{2}$ inches. Material identical with that from which Nos. 3, 4, 5 were carved. Mr. Franks informs me that stone-vessels, of a rude type, are still used in some remote parts of Norway, and believes that he has also heard of them in use in Scotland; but I think this is the first instance of a hoard of them having been discovered under circumstances which so satisfactorily connect them with our pre-historic Highlanders, the earliest race peopling that country of which, as yet, we have any good evidence.

Vessels of chloritic schist have been found before, buried near the so-called "Pictish" towers in Scotland, and elsewhere; but they have invariably been of a much more advanced type, generally ornamented with an external line of bead or scroll-work, and chiefly of a shallow, oval, patera-shape. Of such kind was one discovered at Skibo, near Tain; and also one found near Dunrobin Castle (Sutherlandshire), a drawing of which my friend, the Rev. Mr. Joass of Edderton, has been good enough to send me; but all that have been found are far higher in art-character than these specimens from Unst.



Skull A. From the Mickle Heog, Shetland.

a. "Pneumatic process."

To face p. 299.

Remarks on the Human Remains from the Mückle Heog, in the Island of Unst, Shetland. By C. Carter Blake, F.G.S. etc.

This skull* (marked A) is that of a large healthy male of about forty years of age, in the prime of his health and strength. It was found with the other remains which have been described in the kist from the Mückle Heog, in the Isle of Unst, Shetland, which has been described by Mr. Roberts, who kindly placed the human remains in my hands for description.

General Contour of the Skull.—The "norma verticalis" exhibits an ovately dolichocephalic form, with slightly developed tubera parietalia; it is also nearly aphænozygous. Seen sideways, the supraorbital ridges are strongly developed, and the glabellar eminence between them is elevated in such a way as to form to a moderate extent a shelf-like ridge extending throughout both supraciliaries. The forehead is roundly curved, and slopes equably upwards to the coronal suture, where, after a very slight depression (apparently not due to constriction), the sagittal line is continued to the apex of the lambdoid. Around this point there is a decidedly marked flattening, which presents the skull (without the broken off maxillary) and *à fortiori* without the mandible, to be placed so as to rest on the upper half of the supraoccipital bone without danger of falling. Beneath this spot a rapidly re-entering curve brings back the line of the supraoccipital to a line answering to the upper semicircular ridge, but concave instead of convex; and below this the curve is convex to the semicircular ridge, where the occiput shelves gently down to the foramen magnum. Seen in front, the size of the nasal, and width of the malar bones, indicate strongly marked features in the physiognomy of this savage. The norma occipitalis shows a globular contour, chiefly broken by the divergence of the large supramastoids on either side of the skull which stand forth like projecting buttresses. The fora-

* Such a word as "normal type" is used in this paper merely to denote the characters common in the majority of European skulls, and not in any transcendental sense, as implying the characters which may be exemplified in an ideal type-form of the human race.

men magnum is of the normal form and situation, although the condyles have a very slight forward direction, doubtless in relation to the powerful jaws, and necessitating the attachment of powerful occipital muscles.

The *maxillary bone* is normal, but rather high, taking a line from the suborbital notch to the alveolus of the second premolar. The palate is arched, and deeply vaulted. The two mesial incisors, and the right *m* 3 are unfortunately absent. All the other teeth are in place; they are free from *caries*, and exhibit the normal number of cusps and fangs.

The *mandible* is compactly formed, the ramus and condyle offering no character which is not usual in the athletic European. The condyle is low, and backwardly directed. The coronoid is rather high, but with no noticeable peculiarity in its forward direction below the sigmoid notch. The forward projection of the apex of the condyle gives to this notch, however, an appearance of greater depression than is actually the case, although it is possible that some of the back part of the condyle may have been absorbed during life. The angle is very large and outwardly produced, without any trace of any inward inflection, although the surface for the attachment of the entopterygoid is strongly marked, extending beneath a very deep mylo-hyoïd groove. The masseter has left evidence of its being strong and powerful. The mental process is strongly developed, a concave surface extending from it elegantly upwards to the lower borders of the incisive alveoli. The genial tubercles are distinct. No incisor is in place, but the other teeth exhibit the same healthy condition as in the mandible. Neither canine nor premolar offer any deviation from the common European type, which is further strikingly exemplified by the quadricuspid *second* and *third* molars; the first molar showing the usual retention of the fifth cusp, which is the human form.

The *occipital bone* exhibits some peculiar characters, which I must here describe in detail. It is divided horizontally across into two portions by a deeply depressed line, about where the upper semicircular line should be; on either side of this line can be seen traces of a dentated suture, which has

divided the upper from the lower half of the supraoccipital. Above this line the skull is produced into a convex globular mass, which has evidently originated from one central point of ossification. This line on the outside indicates the line of the tentorial attachment with tolerable exactness.* Beneath this line the supraoccipital bone is marked with the amount of elevations and depressions for the attachment of the muscles normal in the athletic male. One peculiarity, however, deserves especial notice. The structure which Professor Hyrtl has termed the "pneumatic process" of the occipital bone is here present. In order to convey to my readers the precise meaning of this term, I transcribe a few passages from his memoir. (*Nat. Hist. Review*, 1862, p. 95) :—

"Some time since I directed the attention of anatomists to a very interesting and anomalous process of the condyloid portion of the occipital bone (*Wiener Medic. Wochenschrift*, 1860, N. 45).

"This process is situated between the articular process of the occipital bone and the mastoid process of the temporal. It presents an elliptical form, the long axis of which is vertical, and its circumference is about that of the tip of one of the fingers. The process is not solid, but consists of many cells, which are in direct communication with the 'air-containing' cells of the mastoid process. Hence I have called these processes 'Pneumatic.'

"Since the notice above referred to was written, two additional instances of the occurrence of this process have presented themselves to me. One was given me by a student, who found the skull in a large bone-house in a burying place, in his native town in Bohemia. The other was observed in a female skull, from my dissecting room. In both of them the processes are as large as a hazel-nut, and they are covered by so thin a layer of compact osseous structure, that the internal arrangement of the air-containing cells can be easily distinguished. In the female skull referred to, the cells of the pneu-

* My anatomical friends will perceive that a too literal interpretation of these words will invest them with a signification I do not wish them to possess.

matic process extend as far as the condyloid process of the occipital bone, where they lose their partition walls and unite to form a single rather large cavity.

"It is a curious fact, that the cells of the pneumatic process communicate with those of the *mastoid*, passing, as they do, across the *mastoid suture;* but there are many similar cases in Comparative Anatomy, where the pneumatic cavity of the frontal bone extends (across the coronal and lambdoid suture) to the occipital bone (*Elephas* and almost all other Pachydermata.)

"A careful investigator will not confound the new process with the paramastoid process, which is very often present in skulls. This latter is a strong process, with a thick layer of compact substance, containing no cells (simply common reticular substance), and is most commonly united to the lateral part of the atlas by synostosis.

"I cannot give a better proof of the differences between the two processes, than by stating that both these processes are to be seen in a skull in my collection (No. 711)."

The careful investigation of this specimen and comparison of it with the two other skulls from Mückle Heog, will further exhibit the peculiarity of this skull. In skull B it will be seen that the spot which is occupied by cancellous tissue is solid bone, whilst in skull C the very common condition is presented of cancellous structure extending forward in front of the spot which is elsewhere filled by the pneumatic process, and parallel with the line of the true mastoid. Reverting, however, to the present skull under discussion, I would call attention to the fact, that in this skull also is seen the paramastoid developed on both sides from the jugular eminence. In this skull, however, the paramastoids, which are so broken as to expose their interior, are filled with cancellous structure, thus differing from most of the frequent cases I have observed of that which was once thought an abnormal rarity. The digastric fossæ are deep. No especial characters are presented by the basi- or ex-occipitals.

The description given by Professor Hyrtl of this peculiar structure was so precise, that I thought it best to communi-

cate to him the discovery, and I have the pleasure here to insert the following important letter from him :—

"Vienna, Nov. 17th.

"Dear Sir,—I am indeed very much indebted to you for the communication of the highly interesting case of a pneumatic process in the old Shetland skull. This case is the fifth which came to my knowledge. Besides two in my keeping, Professor Luschka, of Tübingen, communicated to me a third,—a fourth has been observed in the skull of an old inhabitant of Egypt, by Dr. Walner, who accompanied His Highness the Duke of Chambord to the Pyramids ; and the fifth is your own. During three years I have inspected carefully the skulls of every dead body brought to my anatomical dissecting-room, (:675:), but no trace of this curious occurrence could be found. The above-named doctor made me also a present with a skull from the tombs of Thebais in Egypt, whose mastoid processes are monstrous. They are as large as the egg of a fowl (hen?). I found out that all skulls of Tyrolian and Swiss peasants, who accustomed to carry heavy burdens on the top of their heads, have very large mastoid processes. As this custom prevails also in many parts of the East, and is indeed a very old one, I have not been much surprised by the striking appearance of so mighty processes in an Egyptian skull. The sterno-cleido-mastoid muscle does nothing to move the skull; it is only charged with balancing the skull in every position, and maintain its *firm position* on the spine. By carrying burdens on the head it must act vigorously, and necessitates henceforth a corresponding development of the mastoid process.

"To this I add my best compliments, and remain

"Yours very faithfully,

"J. Hyrtl.

"*C. Carter Blake, F.G.S.*"

I am far from believing that the above character is so rare as is commonly asserted, although it is the first instance which has come under my own observation. Professor Hyrtl hints at the morphological value of the discovery. I confess I am myself at a loss how to appraise this; and confess myself

totally ignorant of the significance of this pneumatic process. If we adopt the vertebral theory, which I have long myself been led to entertain, we may, while assigning to the paramastoid or paroccipital the place of the parapophysis in the epencephalic arch, consider the "pneumatic process" as its diapophysis. But to demonstrate this conjectural assumption as an essential verity, would necessitate a comparison of this structure throughout the whole series of inferior Mammalia. I hope something of this kind will be attempted; and that some more skilful member of our society than myself will endeavour to fulfil a task which I can here only indicate. The conformation, development, and homology of the occipital bone is a task which deserves careful investigation at the hands of our society.

Nasal Bones.—These extend strongly forward from a moderately deep, though clearly-defined supranasal notch. As is common, the mesial line of the suture between the two nasal bones is not conterminous with the suture upwardly dividing the frontal bone. The nasals are well arched, and their even downward spread would lead us to infer that there was a large, high, and forwardly produced aquiline nose during life. It may here be incidentally remarked, that the lacrymal fossa is deep.

The Malar Bone exhibits no abnormal character. The upward process which joins the frontal is produced backwards with the even and equable curve common in, but not characteristic of, the malar in the European races.

Condition of the Sutures.—The frontal suture is entirely obliterated, as well as the sinistral portion of the coronal.* On the right side, however, some abnormal cause, probably pressure, has caused the surface of the skull near the coronal suture to be distorted in such a way that the parietal bone is distinctly, although loosely, elevated above the level of the coronal. The obliterating process has, however, not stopped at the mesial line, but is distinctly visible for a quarter of an inch on the right side of the sagittal

* Compare Barnard Davis on the Neanderthal skull, *passim*. *Memoirs of the Anthropological Society of London*, vol. i, p. 281.

suture. The latter is obliterated throughout the first third of its length, but posteriorly shows evidence of having been, before entire obliteration, serrated by deep re-entering processes, which have firmly united it. The apex of the lambdoid is also partially obliterated, the process extending towards the temporomastoid sutures on either side. The alisphenoid bone, as in the normal condition, overlapping the parietal, and connected with it, offers no peculiarity in its suture on either side. It differs markedly from the same part in the Negro or Australian. The squamosals especially, near their supramastoid ridge, have left on either side quasi-cordate or sesamoid ossicles at the junction of the squamous suture with the *additamentum mastoidalis*. This latter is considerably divided, especially on the right side, where the lambdoid suture, immediately above the paroccipital, shows a tendency to divide, and to exclude from the mastoid sundry ossicles.

Traces of Integuments.—Portions of the parietal and occipital bones are distinctly marked by broad blackened bands, as if of bituminous substance, but which, when closely examined, reveal traces of hair adherent to the bone. These evidences of hair are, however, confined to the posterior portion of the head, where they are to be observed disposed in vertical bands, the axis of which is generally parallel to that of the posterior portion of the sagittal suture.

Notes on the Skull marked B.—This skull, also from the same locality, is that of an athletic man. It is ovoid and phænozygous in form, but is more brachycephalic than the former skull. The even curve which stretches from the prominent glabella is unbroken till it reaches the upper semicircular ridge. A distinct parieto-occipital flattening, is visible above this spot, which is further rendered abnormal by the presence of a large and well-defined *os triquetrum*, which cuts off the upper angle of the supraoccipital bone. This intercalated ossicle is asymmetrical. The mastoid bone is large. The zygomata, however, do not extend backwards into a supramastoid ridge, but terminate their lateral elevation behind the posterior border of the squamosal. They are also exceedingly weak near the junction with the malar. There is no paroccipital, nor is there

the slightest trace of a "pneumatic process." The supranasal notch is far deeper than in the skull A, and so are the canine fossæ. The alisphenoid and the parietal join. The foramen magnum is asymmetrical, but in its normal position and direction. The series of teeth in place indicate a fair amount of erosion. The entire molar series on both sides is absent; but the left canine and left premolar are, however, in place. The surfaces of the first molars exhibit the quadrate form so common in these skulls. Slight traces of caries are visible in the canine.

Notes on the Skull marked C.—Possibly belonging to an athletic female (but which I nevertheless consider to have been a male), it approaches the brachycephalic type more markedly than do the two other skulls A and B. An even curve extends from above the moderately-produced supraciliaries, and the rather prominent glabella, to the apex of the lambdoid. The supraoccipital bone above this is produced markedly to the upper semicircular ridge, where the occiput shelves gently down to the foramen. Slight paroccipitals are visible. The mastoids are rather large. The squamosal bone rises into a rectangular point in its upper surface. The spread of the temporal muscle, especially on the left side, has obliterated the coronal suture and the neighbouring parts, in such a way as to render the apparent juncture of the alisphenoid and parietal very small. The zygomata are slender, but the supramastoid ridges are strongly marked. The palate is broad and high. The canine fossa is very deep. The frontal notch on the right side is broadly excavated. The two first premolars, first and second molars on each side, are alone in place. They are rather worn, the first molar especially showing the usual crescentic mark of enamel on its anterior portion. The mandible of this skull has been lost.

Notes on the Lower Jaw marked D. — This jaw belongs to an entirely distinct type from any of the above described. The greater proportional width of the space between the condyles, the apparent obtuseness of the angle (so far as we can judge of the form, when allowing for the fact that the greatest part of it is broken away) may possibly indicate an individual of

totally distinct physiognomy. The molar series are alone preserved, the third molar on the left side being wanting. The crowns of the teeth are quadrate, and indicate some erosion—not, however, to any great or marked extent.

General Observations on the above Three Skulls.—The few conclusions which I can draw are:

1. The skulls described do not belong to the same type as that commonly termed "Celtic."

2. They present no points of affinity with any of the skulls of alleged high antiquity from Borreby, Plau, Engis or Neanderthal, with the series of skulls usually found in our river beds (Muskham, Eastham), or with those of our ossiferous caverns (Mewslade, etc.) Still less do they present any affinity with the skulls from the ancient burial places near Caithness, which have been recently laid before us by Mr. Laing.

3. The individuals interred were of considerable stature, and of great muscular strength.

4. The food on which they subsisted was softer than that of the old inhabitants of Scandinavia, during the "Kjökkenmödding" period of Northern Europe.

X.—*Notes on Certain Matters connected with the Dahoman.* By Richard F. Burton, late Commissioner to Dahome, V.P.A.S.L., etc. etc.

Hic Niger est, hunc tu, Gens Angla, caveto!

Mr. President and Gentlemen,—In availing myself of the opportunity now afforded me of addressing you, I cannot but congratulate ourselves upon the fact, that we find in this room a liberty of thought and a freedom of speech unknown, I may assert, to any other society in Great Britain. It is well so. Our object of study being Man in all his relations, physical, moral, psychical, and social, it is impossible to treat the subject adequately without offending in general the *mauvaise honte*, the false delicacy, and the ingrained prejudices of the age. Without some such refuge for Destitute Truth as the rooms of the Anthropological Society, we should find it equally difficult to relate and to publish facts. Indeed, some years ago, I was induced to propose that if the terminology of certain natural objects be held too gross for ears modest and polite to hear, the physiologist might adopt some system of conventional symbols which, like the finger-language of the Chinese ideologist, would obviate the displeasures of articulation. Some such symbolism is everywhere instinctively known to the natural man. This highly decorous proposal was, however, I regret to say, utterly ignored.

The kingdom of Dahome, upon some of whose peculiar customs it is proposed to treat this evening, is one of the eight purely negro empires, a connected account of which would read greatly to the edification of Europe. The others on the western coast are Inta or Asiante, corrupted to Ashánte, Ashanti, and Ashantee; she has lately been at war with our

Gold Coast protectorate, and as she began with right so she left off with honour. The next in consequence is the kingdom of Ibini, or Great Benin, which I visited in 1862 and described in *Frazer's Magazine* (January, February, and March, 1863). At the beginning of the eighteenth century it was, as Bosman and Barbot prove, important and powerful. It is now suffering from the ambition of its two brother and rival princes. Both Ashante and Benin are as inhuman in their worship as is Dahome, and probably more heads fall during the year in the former than in the other two together. The Lake Regions of Central Africa have of late years yielded to our knowledge the interesting Highland country of Karagweh, with its hospitable chiefs and its curious and intelligent population. To its north, between the Tanganyika and where the Victoria Nyanza has been conjectured to lie, is Uganda, a fine hilly country, inhabited by a superior race of negroes; it rivals in atrocity the most terrible despotisms of Western Africa. Above Uganda again is Unyoro or Kittara, where Nature is by no means so kindly, and which appears to be in a state of decadence. These three were described by me from the reports of Arab merchants living at Kazeh, in Unyamwezi (*Journal R. Geographical Society*, 1860), and have since been visited (in 1862) by the lamented Captain Speke and his gallant companion Captain Grant. The latter, whose book is already advertised, will, it is to be hoped, favour us with as many anthropological details as possible. In Central and Tropical Africa there is the great empire of "Matiamvo," properly the Muata ya Nvo, or Lord of Nvo; to his appalling court visits have been paid by Graça (1847) and other Portuguese travellers. Finally, in South Eastern Intertropical Africa there is the country of the Muata Cazembe, once a vassal of the Muata ya Nvo. His capital Usenda, or Lusenda, was first visited in 1799 by Dr. de Lacerda e Almeida. That learned Portuguese traveller died before giving a name to the city, and was followed in 1831-32 by Majors Monteiro and Gamitto, whose volumes contain almost all desirable information except an exact geography. The two last-named kingdoms are of considerable size, and nothing can be more horrible than the cruelties practised by priest and king

upon their extensive populations. The others can boast of only a few square miles, and appear at present to be dismemberments of once important empires. Dahome and Benin, for instance, are now independent provinces of the great Yoruban despotism, whose capital Katanga or Oyo (pronounced Awyaw) was destroyed in 1825 by the Haussa and Fula Moslems.

A brief sketch of Dahoman annals will be the most fitting introduction to an account of its present peculiarities. The once great military kingdom was first made known to Europe in November, 1724, through a letter written by a Mr. Lamb or Lambe, reporting to Mr. Tinker, agent of the English fort or factory at Whydah, his forcible carriage to and detention at Agbome, the capital. Between that year and 1727, the Dahoman conqueror, a negro Scourge of God, named Agaja Dosu or Turudo (one who dashes, *i. e.*, throws presents to the people) attacked successively the three populous little kingdoms which lay in his path, from the interior to the coast. Allada, Tori, and Whydah, which should be pronounced Hwedah, were taken with dreadful slaughter, and incorporated in a single empire, enabled Agaja to attain the summit of African ambition, a port on the seaboard, where he could trade directly with white men. Since Mr. Lamb's day the country has been visited and described by a variety of travellers: Captain William Snelgrave (1726), Mr. William Smith (1726), Mr. Robert Norris (1772), Dr. John M'Leod (1820), Commander Forbes (1849-50), the author probably best known to the English reader; Lieutenant Wallon, of the French Navy (1856-58), Commodore Wilmot (1861-62), and myself.

As far back as half a generation ago, Commander Forbes (*Dahomey and the Dahomans*, vol. i, p. 19) correctly stated, "Strange and contradictory as it may sound, this great nation," (he had seen nothing in Africa but petty tribes,) "is no nation, but a banditti, and there are few pure Dahomans. Those who may claim to be of the race are the king's family and the nobles; but even these are not of pure descent, as the harems of all are replenished with the fruits of war. As a military nation, the officers are natives, the soldiery foreigners, pri-

soners of war or purchased slaves." During Gelele the present king's attack on Abeokuta (March 15, 1864), it was remarked by the Iwe Irohin, a local paper, "notwithstanding the desolation he has made, it does not seem that he can collect more than 10,000 or 12,000 fighting men for an expedition like this: of these scarcely one-half are really Dahomians; some are forced to come against their will, and to any objection the answer is easy, 'Then we must kill you at once.' Of four prisoners in one house, only one was a true Dahomian; one was from Refurefu, a town on this route destroyed several years ago by Dahomey; another was from Makun, the country they attacked unsuccessfully last year, and the fourth was an Egba, Joseph Madarikan." The old race of black Spartans, concerning which Dalzel's *History* speaks in such high terms, has been killed off, and captives, slaves, and mongrels now occupy its place. The only proper freemen with any remnant of ancient blood is the royal family, which numbers perhaps two thousand souls. It cannot, however, be pure, as its members rarely intermarry.

Under these circumstances, it will be useful to enter into certain ethnological explanations of terms occurring in the pages of the older authors; many of them will become unintelligible. The name Fouin or Foy applied by the history (Preface xv) to the Dahoman race, is a corruption of Ffon, meaning the Dahoman dialect, which the Rev. Mr. Zimmermann (*Grammatical Sketch of the Akra or Ga Language*) miscalls "Ewe." The Tuffoes (p. 34) are a people properly named Aizoh, who inhabit Tofo, a fine rolling country, on the west of the high road from the coast to the capital. I cannot help thinking that Ossue (p. 51) or Assue, the name of a Caboceer, is connected with Iso or 'So. This is a tribe which during some forgotten war fled from Dahome, and established itself in a lagoon called, *par excellence*, the Nohwe, and christened in our charts Denham Waters, by the gallant naval officer of that name. The Dahoman king is sworn never to lead his army where canoes may be required; these Iso, therefore, have built their huts upon tall poles, about a mile distant from the shore. Their villages at once suggest the Pra-

sian Lake dwellings of Herodotus, and the Crannoges of Ireland, and the Swiss Waters. The people are essentially boatmen; they avoid dry land as much as possible, and though said to be ferocious, they are civil enough to strangers. In June 1863, I moored my little canoe under one of their huts, and I well remember the grotesque sensation of hearing children, dogs, pigs, and poultry actively engaged aloft. The Mahees (p. 59, *et passim*), better written Ma*khi*, with the Arabic guttural, are mountaineers, inhabiting the country north of Dahome proper. They are almost always at war with their neighbours, and they were first visited in 1846, by the late Mr. Duncan, who describes them as a superior race. "Weemey," or Wemy (p. 60), is Wémé, a little district, near Grand Popo, on the seaboard west of Whydah; this once "respectable state" has fallen so low that few know its name, some will locate it near Porto Novo, east of Whydah. The "kingdom of Appah" (p. 61), which we are told most erroneously reaches eastward as far as the Bay of Benin, is the little place near Badagry, and known to our directories as "Appee." The Sarrachee nation (p. 163) is interpreted to be an East Yoruban tribe, mixed with the Makhi mountaineers. The country called Croo-too-hoon-too (p. 199) is unknown. I have conjectured that it lies near the Hun-to-nun, or "Canoe Water," a now shrunken *fiumara*, between Agbome and the Tofo plateau. Peshie (p. 214) is for "Kpesi," a subtribe of the Aja nation, lying to the south west of Agbome. The French call them *Les barbares*, and little is known of them, or of their conquerors, the Ajabi, the Ajabi-kome, and the Ajawachi, except that they worship thunder, probably the Shango or Jupiter Tonans of Yoruban mythology. I may remark *obiter* that the latter system is extensive and complicated, bearing traces of an Eastern derivation, from the Nile Basin, or even from Asia. For instance, this now inland people has an ark or canoe, which reminds us of the Hindu "Argha," the symbolic source of all mammalian life still typified by us as "Noah's Ark."

In Commander Forbes we find the names of tribes (vol. i, p. 8), "Attahpahms" and "Ahjabee." The "Atakpamwe" live

in the country west of Agbome, across the River Mono (vol. ii, p. 96), which runs to the Lagoon of Grand Popo. Like the Ajas, they wear three short cuts up and down the cheek, when the Nagos or Abeokutans prefer three long. The "Ajabi" placed (p. 19) to the "eastward of Abomey," are to the westward, and the word is a corruption of the Aja above noticed. "Tappur" (vol. ii, p. 23) is the Takpa or Tappa race, included amongst the Nagos; the women seen at Agbome wear a pin of coral passed perpendicularly through the lower lip. The "Agoonee people" (p. 193) are the Agone, north east of Agbome, lying near the Ogun River of Abeokuta.

Such corrupted words as Muley, Malay or Malaye, Yahoos, Porto Novo, Katoo, and others, have been illustrated in the two volumes which I have lately had the honour to lay before the public. Of the religion of Dahome, of its Amazons and its army, of its customs and grand customs, of its ceremonies, manners and morals, of its rise and decadence, the details there given are as ample as my stay at the capital enabled me to collect. Some further account of its speech may be deemed interesting.

The Dahoman language, called by the people Ffon, and by the Portuguese *Lingoa Geral*, is like the Popo, one of the poorest, the meagrest, and the most incult of the great and rich Yoruban family. It is harsh and explosive; one of my Krumen justly observed, "Dis country wouf, he break man tooth." The nasals and gutturals are most pronounced in and about the capital, where the surface is one thousand feet above sea level. At Whydah it is comparatively soft, but far less pure, and the *lingua Toscana in bocca Romana* is found at Allada, lying between the two extremes.

The Ffon or Ffun is built up on a century or so of monosyllabic roots, and three hundred words suffice for conversation. Like the Chinese, it depends greatly upon accent, and the stranger's ear has hard work. For instance, Sô (Saw) is "yesterday" or "to-morrow," causing perpetual confusion. Só is "a horse" or "bring" (the imperative—verb and root). Sò with depression of the voice is "thunder." So or Soh, with a subaspirate, is "a stick." Also, one word has numerous significations. Thus

"Do," a pit, downwards, etc., has a dozen different meanings. Every vocable ends in a vowel or in a nasal, the latter sound being unpleasantly prevalent. There are archaic expressions, dark and parable-like sentences, titles elliptical in the extreme, which each Fetih has its own dialect, recalling to mind the Zargari Boli, or "Goldsmith's Speech" of India, the English Thieves' Latin, and the Sim of the Egyptian gipsy. It has neither rhyme nor assonance. Two hundred years of European example has not taught the use of a syllabarium; the people still marvel stupidly at the white man's "sense." They practise oratory, as do all savages, and the language, as is mostly the case with barbarous tribes, is copious in material terminology —almost every wild plant and animal has a name. This is conspicuous in the matter of cowries, the local coin. For instance—

40	Akwe, or Cowries	= 1 Kade, or string.
5	Strings	= 1 Afode.
10	„	= 1 Afowe.
20	„	= 1 Afenne.
30	„	= 1 Afainge.
40	„	= 1 Afataton.
50	„	= 1 Afo, or head.
10	heads	= 1 Debwa'aton, or long.

By perpetual cowrie handling the people learn to be ready reckoners. Amongst the cognate Yorubas the saying, "You cannot multiply nine by nine," means "You are a dunce." There are still, I fear, some such in more civilised countries. To express larger numbers, higher than Afaton—a thousand,—heads of cowries are used; thus, Gelele the King was reported to have lost, whilst attacking Abeokuta, "two heads, twenty strings, and twenty cowries" = 6820 men.

Yet, curious to say, the Dahoman numerals between ten (*uwò*) and twenty (*kó*) are exceedingly complicated. Thus, sixteen would be expressed by *afanton nun-hun lokpo*, literally meaning fifteen (*afantan*), and by side (*nun-kun*) one (*lokpo*). The ten first are thus given by Commander Forbes, who spells the language with hyphens, or in separate syllables, without having ascertained what the syllable meant. He has published in his Appendix C, a short vocabulary of the Dahoman language, but the linguist will derive from it scanty benefit. Thus,

1 Deh, according to Forbes, which should be	Dé,	or Lokpo in	Eglz Eni.
2. Oni „ „ „	Wê	„	Eji.
3. Ahtor „ „ „	Attón	„	Etta.
4. Eh neh „ „ „	Enne	„	Erin.
5. Ah tong „ „ „	Attòn	„	Arun.
6. Ah ee zee „ „ „	Aize	„	Effa
7. Teghn oui „ „	Ten'we (*i. e.* 5 + 2)	„	Ej'a.
8. Tar tor „ „ „	Tan''ton (*i.e.*5 + 3)	„	Ejio.
9. Teghn neh „ „	Te''ne' (*i. e.* 5 + 4)	„	Essan.
10. Woh „ „ „	Uwò	„	Eron.

The Ffon, like the tongues of all puerile races, delights in palpably imitative words; *e. g.*, *koklo*, a cock (*cackler*); *kra-kra*, an English rattle (*crackler*). As in all monosyllabic languages, reduplication of the roots is a necessary evil; for instance, *gaga*, long; *gon-gon*, deep. A delight in euphony produces extensive apocope; *e. g. akho' si* for *akhosu' assi*, a king's wife, Amazon, or eunuch. Finally, as in the Egba, there is a somewhat extensive oral proverbial literature, of which the following are specimens:—

1. My musket, after use, needs oiling. [N.B.—Recommending the punishment or acquittal of one accused.]

2. Give a dog a bone, and he will break it and eat it: so will we the town of an enemy.

3. Goat's blood is goat's blood. [N.B.—Anglicè in the vulgar "trumps," *i. e.* we knew all that before (*Connu*)!]

4. What I speak in the debate, I will enact: there is a fish in the river called *pataseke*. [N.B.—This animal has a natural protection, and is able to defend itself.]

5. Let a man stuff himself at night, and he is heavy in the morning: that man's a fool. [Something like our modern "Proverbial Philosophy."]

6. If one partly destroys a country, one is not likely to return in open day, but will take advantage of the darkness of night. [N.B.—Alluding to the Dahoman system of perpetual surprises.]

7. Where war is, there the drum will be.

8. The readiest way to sell is to cry your goods through the streets.

9. In times of peace, the warrior's eye roves in all direc-

tions: in war, it is fixed upon one point. [N.B.—Meaning "Force should be concentrated."]

10. We are the king's sandals.

11. A man entered a room in which lay a corpse; he lifted the sheet, and was asked, why? "Because," he replied, "I am anxious to go where that man is gone." Let us go there, or conquer the enemy. [N.B.—The Dahomans, with other African pagans do not believe, as Commander Forbes supposes, "in a transmigration of souls, and that the dead pass into a happier state;" but that after death the ghost can return at times to earth, and do good or evil to those living. Thus, the rich take their favourite wives and a few slaves with them, some being voluntary sacrifices, and with wives, often suicides.]

12. Although a snake casts away beads, and sheds its skin, it cannot change its colour: nor can I my word. [N.B.—The Dahoman believes that the "Popo beads" are the egesta of a snake; whereas other Africans generally consider them the vertebræ of reptiles. They are dug up in the interior, where they are worth their weight in coral. Imitation has hitherto failed; and it is still disputed whether they came originally across the continent from Egypt, or if they were buried in early times by the Venetians.]

13. Beans, though dried in burning fire, can, by introducing the finger, be taken out and eaten.

14. Fetish men never initiate the poor.

15. Spitting makes the belly more comfortable; and the outstretched hand will be the receiving one.

16. When the wolf goes abroad, the sheep must fly.

17. Let the king grant war speedily; let not our energies be damped. Fire cannot pass through water.

18. In the days of our ancestors, the white trader brought good articles. A musket then lasted twenty years, now three. [N.B.—Upon which Commander Forbes remarks:—"I doubt much if this was not a *double entendre;* meaning that formerly a musket would be of little use in Dahomey, but now its use is universal. All these sayings, as will be seen, are in abstruse parables."]

19. If the leopard kills her prey, does she not feed her

young? If the hind brings forth her young, does she not nibble grass for it?

20. "We shall still drink water." [N.B.—Meaning we shall still live.]

21. You do not give a goat a plantation to sow corn in.* [N.B.—Meaning that he eats it.]

22. Allada is Oyo's calabash. [N.B.—Meaning that no people but the Oyos should be allowed to plunder Allada.]

23. An elephant cannot shelter himself under a clay pot. [N.B.—Used to express the difficulty of concealing a king's greatness. One of the kings called himself Adankpwen' su, (not as the history writes, Ai-yaw-soo), the Male Oyster, as being hard to crack. Another chose, "I am easy in my pace, but always in pursuit."]

I now proceed to notice certain peculiarities in the Dahoman race, which, in the usual phrase, are "unfit for the drawing-room table."

The Dahoman is essentially a polygynist; and the *History* is still correct in asserting "The Dahoman women do not admit the embraces of their husbands during pregnancy, nor at the time of suckling, which continues two or three years, nor while under the *catamenia*, during which they retire to a part of the town allotted to their reception. The prostitutes, who in this country are licensed by royal authority, are also obliged to confine themselves to a particular district, and are subject to an annual tax." The latter class, called *ko'si* (twenty-wife), because the honorarium was twenty cowries, is supplied from the palace; and the peculiar male and female system which pervades the court rendering eunuchesses necessary as well as eunuchs, demands *Hetœræ* for the women as well as for the male fighters. I was hardly prepared for this amount of cynicism amongst mere barbarians; although in that wonderful book, the "Arabian Nights," which has been degraded by Europe into mere Fairy Tales, the lover is always jealous, not of his own, but of the opposite sex.

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* Dalzel (*History*, p. 201) writes the words "Gree ma zon baw," for *Gre* or *Gle*, a plantation; *ma*, not; *zon*, send; *gbo* (pronounced *gbaw*), a goat.

Another great peculiarity in Dahome is as follows:—Almost all the world over, where man is circumcised, the woman is subjected either, as in Egypt, to mutilation of the clitoris, performed in early infancy, when that part is prominent, or as in the Somal and the Upper Nilotic tribes, described by M. Werne (*Reise zur Entdeckung der Quellen des Weissen Nil*), to mutilation combined with excision of the nymphæ and fibulation, the wounded surfaces being roughly stitched together. The reason of such mutilation is evident. Removal of the prepuce blunts the sensitiveness of the *glans penis*, and protracts the act of Venus, which Africans and Asiatics ever strive, even by charms and medicines, to lengthen. The clitoris, called by old authors *fons et scaturigo Veneris*, must be reduced to a similar condition, or the too frequent recurrence of the venereal orgasm would injure the health of the woman. This is the case in the Old Calabar River of the Biafran Bight; in Dahome it is reversed.

Adagbwiba, or circumcision, which in parts of West Africa,—the Gold Coast for instance,—appears sporadic, is universally practised in Dahome. During the days of the *History* (Introd., p. xviii) the time of submitting to the rite was left to the boys themselves, and their caresses were not admitted by the women as long as they remained in the natural state. At present, circumcision is undergone in Whydah and about the seaboard at the age of twelve to sixteen; in the interior it is often delayed till the youth is twenty years old, when it becomes cruel and sometimes dangerous. It is apparently not a religious ceremony: a lay practitioner, and not the fetishman, being the performer. The patient sits over a small hole dug in the ground. The operator draws out the prepuce, which, as amongst Africans generally, is long and fleshy, and removes the blood from it by manipulation. He then inserts under the prepuce the forefinger of the left hand, and wetting with saliva a splint or a bit of straw, marks the circle which is to be removed. Two cuts with a sharp razor, one above the other below, conclude the operation. This would argue an origin unconnected with the Jewish and with the Moslem forms, which also vary; amongst circumcising peoples, however, the rite is everywhere

differently performed. The favourite styptic is heated sand thrown on the wound, which is washed every third day with simples boiled in water. The drink is ginger and warm water; the food preferred is ginger soup, but anything may be eaten except pork.

"A certain operation peculiar to this country," says the History (*loc. cit.*), "is likewise performed upon the women," and this the foot-note thus explains—*Prolongatio, videlicet, artificialis labiorum pudendi, capellæ mamillis simillima.* The parts in question, locally called "*Tu,*" must, from the earliest years, be manipulated by professional old women, as is the bosom amongst the embryo prostitutes of China. If this be neglected, lady friends will deride and denigrate the mother, declaring that she has neglected her child's education, and the juniors will laugh at the daughter as a coward, who would not prepare herself for marriage. The sole possible advantage to be derived from this strange practice is the prevention of rape, but the men are said to enjoy handling the long projections, whose livid slatey hue suggests the idea of the turkey-cock's caruncle. It is popularly said, "There can be no pleasurable Venus without '*Tu.*'" I find the custom amongst the cognate tribes of Grand Popo, but not in any other part of the West African Coast.

As a rule the Dahoman eunuch still marries, and I have heard of cases similar to that quoted in Dalzel's history, when relating the end of the rebel eunuch "Tanga:"—"To his wives he appeared not the rigid jailer, nor the tyrannic usurper of their affections, but the generous arbiter of their liveliest pleasures. Hence they could not but be charmed with a freedom which no other seraglio enjoyed, and" (all devoted themselves to death) "they would not survive that felicity and protection which was to terminate with the existence of their master and their lover, whose ruin seemed inevitable." It is difficult to obtain information in Dahome concerning eunuchs, who are special slaves of the king, and bear the dignified title of royal wives. The operation is performed in the palaces, by evulsion of the testicles, and is often fatal, especially when deferred till the age of twenty. Throughout Yoruba these neutrals are

found at the different courts, and the practice may have migrated from the East.

Amongst all barbarians whose primal want is progeny, we observe a greater or a less development of the Phallic worship. In Dahome it is uncomfortably prominent; every street from Whydah to the capital is adorned with the symbol, and the old ones are not removed. The Dahoman Priapus is a clay figure of any size between a giant and the pigmy, crouched upon the ground as if contemplating its own Attributes. The head is sometimes a wooden block rudely carved, more often dried mud, and the eyes and teeth are supplied by cowries. A huge penis, like the section of a broom-stick, rudely carved as the Japanese articles which I have lately been permitted to inspect, projects horizontally from the middle. I could have carried off a donkey's load had I been aware of the rapidly rising value of Phallic specimens amongst the collectors of Europe. The Tree of Life is anointed with palm-oil, which drips into a pot or a shard placed below it, and the would-be mother of children prays that the great god Legba will make her fertile. Female Legbas are rare, about one to a dozen males. They are, if possible, more hideous and gorilla-like than those of the other sex; their breasts resemble the halves of German sausages, and the external labia, which are adored by being anointed with oil, are painfully developed. There is another Phallic god named "Bo," the guardian of warriors and the protector of markets.

The Dahoman kingdom is apparently not destined long to endure. It contains within itself a preponderance of destructive elements, and hitherto its only safeguard has been the imbecility of the neighbouring tribes. But now the Abeokutans are waxing strong, and the southward progress of El Islam, though slow and gradual, is sure as the course of Fate. Already the Haussa men begin to pour into our youngest colony, Lagos, where, as soldiers and policemen, they are found superior not only to the heathenry, but to the so-called "Christian" Africans. Among the many gentlemen in this room who can confirm this statement, I beg to particularise Governor Freeman of Lagos. The "Safe Faith" is unpopular with our Missionaries, chiefly because they never have con-

verted, and they probably never will convert a single Moslem soul to Christianity. But to the hopeful Philanthropist the dispersion of Africa's gloom, and the dawn of the bright day when she will take her place in the Republic of Nations, appear wholly dependent upon the light of the Crescent. Thus only can the negro be annihilated by absorption with the negroid.

With us there are normally three several phases of popular opinion touching peoples as well as persons. For instance, Bruce was looked upon by the public as a Prodigy of Lying when he first published his ponderous travels. Presently came the inevitable reaction. Bruce became an Angel of Truth. When, however, the two extremes found time to meet and to blend, the great Abyssinian traveller took his place as a man with a solid foundation of merit, and with less than the average amount of error.

So it is with the African. Before the Wilberforcean age, he was simply a negro. That counteraction of the Asiento Treaty and of other little jobs, which founded Liverpool, and which poured five millions of pounds sterling into the national pocket, marked him to the one class a Man and a Brother, to the other a Nigger. But in the light of increased experience, the two extreme opinions must eventually disappear. I have already suggested to our excellent and energetic President that the subject properly treated in the three phases into which it naturally divides itself, would form a publication of material use to the many who would welcome information upon this highly interesting subject. Our strong young Society will aid by difference and discussion in establishing the Golden Mean, and thus by individual and combined exertion we shall succeed in restoring the Negro to his Proper Place in Nature,—whatever that may be.

Thanking you gratefully for the attention with which you have honoured me, I now beg to leave the subject in worthier hands.

XI.—*Notes on Certain Anthropological Matters respecting the South Sea Islanders (the Samoans).* By W. T. Pritchard, Esq., F.A.S.L.

Puaaelo was the wife of Tamaalii, who lived at Fasitootai, in the island of Upolu, *Samoa*. There was nothing remarkable about her person or habits to distinguish her from her countrywomen. Like them, during pregnancy, she attended to the usual duties of Samoan women, without interruption, and without preparation for the "coming event." Amongst other things, she continued to make *tapa*, or native cloth, the manufacture of which necessitates sitting up to the middle in water two or three hours for several successive days (in the first operation of scraping the bark of the paper mulberry, *Brussonatia papyrifera*, of which it is made). On one occasion, while thus busily engaged, and merrily singing her native songs with other women, all in the water, she complained of pains in her back, and went off to the bush on the banks of the river. In about a quarter of an hour she returned with a fine baby-boy in her arms, whom she had delivered without any assistance. She washed and suckled him, and soon he was fast asleep. He was then laid in several folds of *tapa* on the banks, where he slept soundly while she finished her work, and when the party separated, she took her boy home. He is now living with his mother at Fasitootai, and is named Matauli (dog-face), and is a fine healthy lad, about ten years old. The woman and her husband were both in my service at the time. This is an exceptional case, though the Samoan women think but lightly of the pains of childbirth. Their pendant breasts are the result of suckling their children in a peculiar manner, by which they *hang* on the mother and stretch the breasts, as well as the result of the relaxing tendency of the climate. They suckle their children until about two years old. I have seen women who threw their breasts over their shoulders to have them out of the way; and I have seen children standing at their backs suckling from *behind*, when the breasts have been thrown over the shoulders to allow the mother the free

use of her arms in any work she had in hand. The young women, in their coquetry, train their breasts *upwards*; and large full breasts, with the nipple turned upwards, are admired by the young men.

The women have abundance of milk; and, after childbirth, partake freely of certain diet which they conceive tends to keep up the supply.

The men strictly refrain from carnal intercourse with their wives when having the *menses;* and the women are taught then to refrain from tempting their husbands.

At Apia (the whitemen's settlement), a girl became the wife of J. H., an Englishman, before she had her *menses*. In due course, but before the appearance of the menses, she was pregnant. At the birth of the child her pains were great, far greater than Samoan women usually experience. The child died when only a few weeks old, and her supply of *milk was very limited*. At each successive birth her pains were still greater than usual with her countrywomen; but gradually they became less after each occasion. Her third and fourth children both lived, and when I last saw her, she was apparently near her fifth. Since the birth of her first child, her *menses* have appeared regularly, as in other women, and her supply of milk has increased.

Nine out of ten of the women who become wives of white men, if their husbands leave the islands, become prostitutes, and evince a decided repugnance to take native husbands.

By the strict native customs, every village or town provides a *fale-tele*, or free hotel, where all travellers are received, and fed gratuitously. There is no real hospitality in this custom. The object is, by courteous treatment and ample supplies of food, to ingratiate themselves with travellers putting up at these houses, and thereby to secure a like reception from them whenever the entertainers may themselves happen to be travelling. And as they cannot possibly foresee in what direction events may lead them, it has become an institution, supported with all the reverence of ancient custom, to treat all travellers alike handsomely and bountifully, and to anticipate all their little requirements. It is simply an exaggerated development

of the principle of *quid pro quo*. Attached to all these *fale-tele* are certain women who are tacitly understood to be at the carnal service of the travellers. These women are generally the cast-off wives of young chiefs, who, by the rites of polygamy, may have as many wives at a time as they please, and may change them by putting away and taking others when they can, and who, while young and not invested with tribal honours and power, make their selection from among the daughters of the commoners,—girls of lower rank than themselves. But once the wife of a chief, however lowly, however high her birth, inexorable custom forbids her becoming the wife of another man, a girl is always his, though the chief may have cast her off for years. Her only resource is to attach herself to the *fale-tele*, where, though still claimed by the husband who has cast her off, she may become the convenience of travellers, but not a settled wife. Should she at any time elope, if the man who takes her be a chief, her first husband has a just cause of quarrel, and war is soon declared between the tribes to which the two rival young chiefs respectively belong. War is sometimes, however, averted by the aggressor and his tribe offering formal compensation, the amount of which is regulated by the relative rank of the parties; after which compensation, if accepted, the aggrieved party have no further legitimate claim upon the girl. If the cast-off wife elope with a *commoner*, the young chief, or some of his personal followers, simply waylay the unhappy man and "club" him, whose death is held to be at once the just retribution for his crime, and the release of the girl from the further claims of the first husband. She is then free to become the wife of any other man.

The chastity of the daughters of the chiefs was the pride and the boast of their tribes. Old duennas were duly set apart to attend and to guard their virtue and their honour. When a young chief, on assuming his chiefly position in his tribe, took the daughter of a noble to wife, the whole of the tribes, to which the parties respectively belonged, assembled in the *malae*, or open square, which is found in the centre of every town and village, and there the chastity of the bride was put to the test before the gaze of the multitude. If she passed

the ordeal honourably and successfully, prolonged and vehement cheers proclaimed the honour of the tribe and the dignity of the father untarnished. But should the ordeal reveal the disgrace of the tribe and the chief in the lost virtue of the daughter, her brothers—or even her father himself—rushed upon her with their clubs, and depatched her in an instant; and every memorial of her life was destroyed and abhorred,—her very name forgotten from the traditions of the tribe. The ordeal by which the virtue of the chief-girl was tested was obscene, when viewed in the light of civilisation.

The two tribes having assembled round the *malae*, the girl was led into the centre of the scene, and there all her mats were taken off by the old duennas, who then slowly paraded her, naked and trembling, before the silent gaze of the multitude. Then she was seated, with her legs crossed, on a snow-white mat spread on the ground, in the centre of the square, or *malae*. There the chief approached her, and silently seated himself, also cross-legged, close to and directly facing her. Then was the critical moment. Though, perhaps, more than a thousand spectators looked on, of all ages and both sexes, not a word—not a sound was heard. Then placing his left hand on the girl's right shoulder, the chief inserted the two forefingers of his right hand into the *vulva*, while two old duennas firmly held her round the waist from behind. In a moment the chief's arm was held up, the two fingers only extended, when her anxious tribe watched eagerly for the drops of blood to trickle down,—the sight of which was the signal for vehement cheers, which proclaimed the honour of the tribe and the dignity of the chief unsullied, and the virtue of the bride such as became one of her fair name.

Once more the old duennas, loud in songs that told of rivers flowing fast, water no banks could restrain, seas no reefs could check,—figurative allusions to the virgin blood of the chaste bride,—once more those stern old duennas led their trembling and bashful girl, still naked as before, to the gaze of the cheering and excited multitude, to exhibit the blood that trickled down her thighs. Cheers of applause greeted her, which were acknowledged only by the tears which silently stole down

her cheeks. Then, while the bride was being led by the young attendants, who now were to take the place of the old duennas, to the house set apart for her private residence, the old women, happily relieved of their charge, bore the mat, with its scarlet tints, on a pole before the gaze of the tribes, still singing of rushing waters, and bidding the spectators beware lest the loosened torrents engulph them all. After this, a grand feast closed the day, and a grand dance wiled away the hours of night. The public ceremonies over, and chastity of the bride duly proclaimed, she remained quietly in her new home with her young attendants, receiving only a short visit each day from her husband. It was not till the *third* night after the public ceremonies that she had carnal knowledge of her husband. Six or eight months afterwards the tribes again feasted together, and an exchange of property consummated the marriage festivities and the dowry.

No Samoan ever has carnal connexion with a virgin bride before inserting the two forefingers of the right hand into the *vulva*. Amongst the commoners the ceremony is performed in secret, and without any further display than the exhibition to the families of the parties of the mat with the blood which has come from the girl.

The women *profess* a repugnance for uncircumcised men, and hence circumcision is universally practised. I knew only one Samoan who had not submitted to the operation, and he could not by any means induce any woman to become his wife. He was a byword amongst them all, and the constant butt of the jeers and taunts of the lads of his village.

Circumcision is performed by inserting a piece of thin, flat wood under the skin, which is then *slit* with a piece of bamboo (though since the introduction of razors by the traders bamboo has fallen into disuse). The *object* of circumcision is said to be cleanliness; and it is one of the oldest customs of the islands. In every town or village there is a man who usually performs the operation for a payment; but not unfrequently ten or fifteen lads go to the bush and there circumcise each other. The boys are usually eight or ten years of age before they are circumcised.

XII.—*On the Phallic Worship of India.* By Edward Sellon, Esq.

The subject to which it is proposed to direct attention this evening is the worship of Phallus, or Linga puja, which still prevails, and has prevailed in so many ages in India and elsewhere.

It is to be remarked that the adoration of the Lingam in that vast continent of Asia, unlike the more subordinate, and in some respects ridiculous worship of Priapus in vogue among the Greeks and Romans, constitutes to this day one of the chief, if not the leading dogmas of the Hindŭ religion. It may indeed be affirmed that there is scarcely a temple in India which has not its Lingam, and in numerous instances this symbol is the *only* form under which the deity of the sanctuary is worshipped. It has been the practice of missionaries to burke the question of Linga puja, from a mistaken and false delicacy. It is trusted, however, that the members of the Anthropological Society will not be offended if, in the consideration of this subject, a spade is called a spade, and not a rake or a hoe. We will, therefore, now proceed to discuss the emblem, its appearance, nature, and attributes.

The Linga, then, is a smooth, round black stone, apparently rising out of another stone, formed like an elongated saucer, though in reality sculptured from one block of basalt. The outline of the latter, which calls to mind a Jew's harp (the conventional form of the *pudendum muliebre*) they term Argha or Yoni. The former (or rounded perpendicular stone) the type of the virile organ, is the Linga. The entire image, to which the name Lingioni is given, is also generally called Lingam.

This representation of the union of the sexes (for conventional though it be in shape, it is neither more nor less), typifies the divine sacti, or active energy in union, the procreative

generative power seen throughout nature; the earth being the primitive pudendum or yoni, which is fecundated by the solar heat, the sun,—the primeval Lingam to whose vivifying rays, man and animals, plants, and the fruits of the earth owe their being and continued existence. Thus, according to the Hindûs, the Linga is God and God is the Linga; the fecundator, the generator, the creator, in fact.

These Lingas vary in form and size in a very considerable degree. Worn as amulets or charms against the influence of the evil eye, enclosed in small silver reliquaries affixed to the breast or arm, they are minute, sometimes not larger than a bean. The domestic Lingams average some three or four inches in height, and occasionally have the bull Nandi (the Wahan of Siva) carved out of the same piece of basalt; sometimes placed opposite the spout, or *perineum* end of the yoni, sometimes at the side of the emblem.

There appears to be ground for supposing that the Hindûs imagine that the bull will intercept the evil, which, as they say, is continually emitted from the female sacti. Thus, when the Linga is set up in a new village, they are particular in turning the spout of the yoni towards the jungle, and not upon the houses or roads, lest ill fortune should rest upon them.

As every village has its temple so every temple has its Lingam, and these parochial Lingams are usually from two to three feet in height, and rather broad at the base. Here the village girls who are anxious for lovers or husbands, repair early in the morning. They make a lustration by sprinkling the god with *Gunga pawne* (or water brought from the Ganges); they deck the Linga with garlands of the sweet smelling bilwa flower; they perform the *mudra*, or gesticulation with the fingers, and, reciting the prescribed *muntrus*, or incantations, they rub themselves against the emblem, and entreat the deity to make them the fruitful mothers of *pulee-pullum* (*i. e.*, child fruit.)

This is the celebrated Linga puja, during the performance of which the *panchaty*, or five lamps must be lighted, and the *gant'ha*, or bell, be frequently rung to scare away the evil demons. The *mala*, or rosary of 108 round beads, is also

used in this puja. The Lingas found in the monolithic temples of India are of enormous size: in some instances forty feet in height and twenty-five in circumference. They are usually Lingas only, planted on a square base, and not sculptured, as in modern specimens, in conjunction with the Yoni.

As in Christendom, during the dark ages, there were certain shrines to which the superstitious multitude flocked with offerings, and to which they made painful pilgrimages, so the Hindŭs have their favourite shrines of the Lingam. Thus, twelve Lingas are particularly mentioned in the *Kedara Kalpa* of the *Nahdi-upa-Purana* as being of transcendent sanctity. In this purana *Siva* is made to say, "I am omnipresent, but I am especially in twelve forms and places;" these he enumerates as follows:—

1. Somnatha in Sa-mash-tra, *i. e.*, Surat.
2. Mali-ka-juna, or Sri Saila.
3. Maha-kala, or Ougein.
4. Om'kala, shrine of Mahadeo (or great God, a name of Siva), at Om'kala-mandatta.
5. Ama-res-warra, in U-ja-yai, near the hill.
6. Via-dyan'ath, at Deoghur, in Bengal (this temple is still in existence, and a celebrated place of pilgrimage.)
7. Ramasa, at Setabundha, on the Island of Ramissaram, between Ceylon and the continent (here the Linga is fabled to have been set up by the God Ram or Ramā. This temple is still in tolerable repair, and one of the most magnificent in India, with a superb gateway 100 feet in height).
8. Bho-ma-sand-kara, in Dakosmi, which is in all probability the same as Bhi-mes-warra, in the Raja-mahenda district, and there venerated as one of the twelve.
9. Not known.
10. Try-am-bakuŭ, on the banks of the Gomali; meaning, most likely, the Ghoomtee.
11. Gantamessa; site uncertain.
12. Ke-da-re-sa, a Kedara'nauth, in the Himalaya. The last has been frequently visited by travellers.

In each of these temples, the only image of Siva, or Mahadeo, that attracted devotees was a Lingam.

From this circumstance there can be little doubt that the religion of the Saivas, or followers of Siva, is nothing more than a gross system of Phallic idolatry.*

It is true that Siva, as the third person of the Hindŭ Trimurti, is the Destroyer, but he has also his creative attributes. For it would appear that when the attributes of the Supreme Being began to be viewed in the light of distinct persons, mankind attached themselves to the worship of the one or the other exclusively, and arranged themselves into sects. In India the followers of Siva introduced the doctrine of the eternity of matter. In order to reconcile the apparent contradiction of assigning the attribute of creation to the principle of destruction, they asserted that the dissolution and destruction of bodies was not real with respect to matter, which was indestructible itself, although its modifications were in a constant succession of mutation. That the power must necessarily unite in itself the attributes of creation and *apparent* destruction, that this power and matter are two distinct and co-existent principles in nature; the one active, the other passive; the one male, the other female; and that creation was the effect of the mystic union of the two.

This union, which they term *Arda-nari* (a name which, signifying man-woman, seems to point to the androgynous character of the Deity), is adored under various names; Bhava, Bhavani, Mahadeva, Mahamaya, etc. To those who may feel interested in the doctrine of the eternity of matter, a perusal is recommended of a learned treatise by Dr. Büchner, under the title of *Force and Matter*, published by Trübner of Paternoster Row. This interesting work places the subject before the reader quite in a new light. In the opinion of those who compiled the Puranas, Phallus was first publicly adored by the name of the Basĕ-warra Linga on the banks of the Cumŭdaoti, or Euphrates.

The supposed founder of the worship (as we learn from the

* But the separate sects, or religious systems, that we find among Hindus, should never be confounded. The creed that honours Vishnu-Krishna as the Beneficent Power, is quite separate from the demon-worship in which Siva-Mahadeva is adored: and beyond this again is the Tautra system of Cuajic, and the Destroying Power.

Halakanara MS. in Mackenzie's Collections), was Baswa Basava, or Baswapa, the son of Madijah Rajah, a Brahmin, who with his wife, Madevi, inhabited the town or district of Hinguleswur-parbuttee-agaharam, on the west side of Sri Saila, and both devout votaries of Mahadeo, or Siva. From an inscription on the great Singaleswarra Linga (one of the twelve), and also on one at Keneri, carved *in rilievo* in the rock commemorative of the event, it appears that, in approval of this Puja, the great god and goddess manifested themselves to these devoted followers by springing, in a miraculous manner, from the before-mentioned emblem, while the Brahmin and his spouse were in the act of devotion; and we behold in this relievo these persons in a kneeling posture, recessed at the base of the Lingam.

But it is not only the votaries of Siva who adore their god under the symbolic form of Phallus. The Viashnawas (or followers of Vishnu) use the same medium. They also are Lingayetts—one of the essential characteristics of which is wearing the Ling on some part of their persons. It is either of silver, copper, gold, or beryl; the fascinum of the Romans, and the *jettatura* of modern Italy.

The Viashnavas are divided into many sects, whose object of worship, though alike appertaining to all, is adored in a more or less gross manner, according to the practice of the particular one to which they belong. They comprise the Goculasthas, the Yonijas, the Ramani, and the Radha-ballubhis, an account of some of whose practices it may, perhaps, be interesting to notice.

The Goculasthas adore Krishna, while the Ramani worship Ramchunda; both have again branched into three sects,—one consists of the exclusive worshippers of Krishna, and these only are deemed true and orthodox Viashnavas (Krishna being an *avata*, or incarnation of Vishnu).*

As Parameswarra, Krishna is Jaganath (or Lord of the Universe), and represented black, the apparent colour of ether, or

* It must here be observed, however, that many of these sects and practices are disowned by orthodox Hindus, who pin their faith on the Bhábaratah, Bhágavata, and Rámáyan, and reject all the other Puranas.

space. The Krishna Lingas are consequently, also, of the same colour, those of Siva being white. The Lingionijas adore Krishna and Radha united (*in coitu*). The Radhaballubhis dedicate their offerings to Radha only (as the Sacti, or energy of Vishnu). They worship a naked girl, presenting to her the offerings intended for the goddess; in other words, the girl acts the part of Radha, in the same manner that some young girl may have been selected to take the part of the Virgin Mary in the religious plays or mysteries of the Middle Ages.* When these people are travelling, or on a voyage, and a female is not to be obtained for this purpose, their oblations are made to the Yoni (*i. e.* to an image of the *pudendum muliebre*). Hence they are called also Yonijas, as being worshippers of the female Sacti, or power,—in contradistinction to the Lingayetts, or adorers of Phallus. As the Saivas are all votaries of Siva and Pawatee (or, under their more popular appellations, Mahadeo and Bowarnee); so the Viashnavas also offer up their orisons to Laksmi-Nayarana. The exclusive adorers of this goddess are Sactas. The ceremonial worship of this sect is exceedingly free; it is described at large in the *Tantras*.

The adoration of Sacti (or the sexuality of the god and goddess) is quite in accordance with the spirit of the mythological system of the Hindŭs; and the form with which it is invested, considered as the especial object of veneration, depends upon the bias entertained by the individual. It has been computed that of the Hindŭs of Bengal, at least three-fourths are Sactas; of the remaining fourth, three parts are Viashnavas and one Saiva,—all, of course, after their manner, being consequently adorers of Phallus.

The worship of the female generative principle, as distinct from the deity, appears to have originated in the literal interpretation of the metaphorical language of the Vedhas, in which Will, or purpose to create the universe, is represented as originating from the Creator, and coexistent with him as

* This naked worship is peculiar to the Sactas, and appertains to the Tantrica, or black magic. Those who adore Krishna as an emanation of Vishnu, abhor the Tantras and Devi Bhágavat.

his Sacti (or bride), or part of himself. The Sama Vedha, speaking of the divine cause of creation, says, "He experienced no bliss, being isolated,—alone. He ardently desired a companion, and immediately the desire was gratified. He caused his body to divide, and became male and female: they united, and human beings were made." This first manifestation of divine power they term *Ichcha' pupaa*, or "desire personified;" and the Creator is designated *Swechchamaya*, "united with his own will." Sacti is always alluded to as Maya (delusion), one with Prakritoi (or nature). "She," says the Prakriti-Khanda-purana, "is one with Maya, because she beguiles all beings."

Mr. Patterson—who has treated the subject of Lingapuja at large in the eighth volume of the *Asiatic Researches*—states, "that the idea of obscenity was not originally attached to these symbols; and that it is likely the inventors themselves might not have foreseen the disorders which the worship of Phallus would occasion amongst mankind." Whether the western nations derived the Culte de Phallus from India, is a question which cannot now be decided with any degree of certainty; but assuming such to have been the case, this superstition in all probability travelled *viâ* Egypt to Syria, and may have been thereafter adopted by the Greeks and Romans.

From what the Rabbi Aeha says (in the *Gemara Sanhedrim*, c. xxx, as cited by Ryland) respecting the different earths which formed the body of Adam, it would appear that the mysteries of this worship were not unknown to the Jews, and were to a certain extent cultivated by them. According to Theodoret, Arnobius, and Clemens of Alexandria, the pudendum (or Yoni) was the sole object of veneration in the mysteries of Eleusis; for we are informed that when the people of Syracuse were sacrificing to goddesses, they offered cakes formed like the *vulvæ*, called μυλλοι; and in some temples, where the priestesses were probably ventriloquists, they so far imposed on the credulous multitude who came to adore the image of the female power (or Yoni), as to make them believe that it spoke and gave oracles!

The Argo of the Greeks, the Cymbium of Egypt, and the

Argha (or Yoni) of India, were all represented by a cup or boat;—Osiris of Egypt standing in a boat; Noah in his ark, or Argha; and Iswarra, "lord of the boat-shaped vessel," rising from the Yoni, have all possibly one common origin; viz., the Linga and Yoni in mysterious conjunction. There would also now appear good ground for believing that the ark of the covenant, held so sacred by the Jews, contained nothing more nor less than a Phallus, the ark being the type of the Argha or Yoni.

To sum up the information which has recently been obtained on this interesting topic,—interesting because it relates to the earliest worship practised by man,—it may, in conclusion, be remarked, that the Culte de Phallus prevailed not only amongst the Hindŭs, Assyrians, Babylonians, Mexicans, Etruscans, Greeks, and Romans in ancient times, but that it still forms an integral part of the worship of India, Thibet, China, Siam, Japan, and Southern Africa, and possibly further researches will prove, in numerous other countries also.

XIII.—*The History of Anthropology.* By T. Bendyshe, Esq., M.A., Fellow of King's College, Cambridge; Vice-President of the Anthropological Society of London.

Introduction.

Anthropology, or the Science of Man, is that science which deals with all phenomena exhibited by collective man, and by him alone, which are capable of being reduced to law. It is an empirical science, because we can only ascertain such laws from the observation of facts. It joins natural history, at the one extremity,—from the strong probability that man neither has in his origin, nor will, during his existence as a species, genus, family, or kingdom, form any exception to the general laws which govern animated nature; and at the other, that is, in its highest and most peculiar department, Anthropology has at present nothing beyond what is more generally known as the science of history. For if there be such a science as this last, it may be defined as the science which explains the mode in which man, in his collective capacity, must needs act in order to furnish the material of that regular sequence of events which may be recorded or not, but which when it is recorded, goes by the name of history.

But the whole domain, from the origin of mankind to its ultimate destiny and extinction as a species, is embraced, so far as it can be understood, by Anthropology. Many smaller sciences will, of course, be carved out of it, with which the anthropologist, strictly so called, will have little or nothing to do. But that this whole space belongs to his domain will be seen from these considerations. First, as to the origin and prehistorical life of man, there is no other science which can even pretend to those questions as ones it can entertain. The first might, indeed, be included in zoology; but clearly not the second. Nor can ethnology lay any claim to say anything of a period when, for all we know, man was not divided into races at all, or, at all events, when nothing is known about them.

The science of history, on the other hand, in its narrower sense, cannot deal with matters of which there are no records. We may, indeed, deduce from observation of what goes on amongst savages, and by comparison of that with such facts as the remains of primeval man affords, some idea of his primitive state. But the considerations thus deduced from recorded history alone would be of little avail without the assistance of geology, to tell us the conditions of the earth when primeval man appeared, and of palæontology, to tell us who his companions were. With these, history, in its ordinary sense, has nothing to do. But the contrary proposition is a very different one. Anthropology, though not confined within the limits of the history of races or nations, cannot be excluded from them. All histories presuppose some common principle of action to races and to nations, however different in many respects, to which they appeal, and from which they derive almost all the interest they possess. Such principles are common, in fact to man, or, as we may say, to humanity. And so far as the science of history can explain the modes in which these common principles have produced recorded events, so far it will be held to be more complete. But could there be a man so endowed as to explain how those common principles have operated from the origin of man, and produced all past and present history, such a man would certainly be profoundly skilled in history, but would be still more entitled to be called the first of anthropologists.

The rise of anthropology into a science has necessarily been very slow; but the gradual steps by which, at last, it has arrived at recognition and become a systematic study, are of great interest. I propose to trace this progress from the earliest times, and to show how anthropology—which, at its outset, was embarrassed with speculations on the origin of all things—has gradually become disentangled from the smaller sciences, which have been carved out of it, and through which still lies the path to some of the generalisations, by means of which alone it can be carried to perfection, until at last it stands no risk of being confounded with any other department of knowledge, excepting that of ethnology,—the essential

difference between which and itself is becoming more clearly understood every day.

Part I.

Early Anthropology.—Anthropology, till recent times, consisted of little more than fanciful speculations or dogmatic assertions upon the origin of man, and a few faint attempts at the classification of the principal races, or rather nations. The opinions of the ancients are briefly summed up by Censorinus in his book,

De Die Natali, c. 17.* "I will give shortly a few of the opinions which the ancients held on the origin of man. Since it is matter of fact that individuals are procreated from the seed of their parents, and go on propagating for many ages by a succession of progeny, the first and general question was discussed among the philosophers of antiquity. Some thought that men had always been in existence, and never had any other origin but men, and that their kind had no beginning or fountain head. Others, that there was a time when man was not, and that nature had in some way given him a commencement. Amongst those who are of the first opinion,—that mankind has always existed,—are Pythagoras of Samos, Ocellus Lucanus, Archytas, and all the Pythagoreans. Nor do Plato, or Xenocrates, or Dicæarchus, or the philosophers of the old academy, appear to have been of a different opinion. Aristotle and Theophrastus, and many other of the best Peripatetics, write to the same effect; and as an argument, they deny that it has ever been settled whether birds or eggs were produced first, since no egg can be born without a bird, and no bird without an egg. So they say there never has been any beginning of all the things which ever have been, or shall be in this eternal world; but that it is a sort of globe of generations and births, in which the beginning and end of everything that is born seems to be the same.

"There have been, however, many who have believed that some primitive men were created either by divine power or by nature, but have differed in opinion as to the method. The

* The best edition is by Havercamp. Lugd. Batav., 8vo., 1743.

fabulous accounts of the poets relate that the first men were either made out of soft mud by Prometheus, or were born from the bare stones of Deucalion and Pyrrha; and some of the professors of wisdom have proffered opinions, if less monstrous, at all events not a bit more credible. Anaximander, of Miletus, thought that fish, or some animals very like fish, sprung from water and earth in a heated state; that men began to grow inside these, and were retained within as fœtuses to the age of puberty, and then at last broke through and came out men and women, who could take care of themselves. Empedocles, too, in his noble poem, according to Lucretius, was of somewhat the same opinion. At first, separate members were put forth everywhere by the earth in a sort of pregnancy, which afterwards came together and made up the material of a solid man, out of a mixture of fire and water. But why pursue such opinions further, which have no appearance of truth? Parmenides and others were of the same opinion, differing but slightly from Empedocles.

"Democritus of Abdera thought that men were at first procreated from water and mud; and so did Epicurus, for his opinion was that some sort of wombs, made out of warm mud which stuck to the roots of the earth, were the first things which grew, and that these afforded, through the ministration of nature, a congenital milky liquor to infants who sprung from them, and that when these last were in this way brought and grown up, they propagated the human race. Zeno, of Citium, founder of the Stoics, thought the origin of mankind must have been made out of the world when young; and that the first men were born by the sole addition of some divine spark,—that is, by Divine Providence.

"Finally, the vulgar opinion was such as is given by most genealogists,—that the ancestors of some nations, who were not descended from any external source, sprung from the earth, as in Attica, Arcadia, and Thessaly, and so they were called *autochthones*. And credulity, ignorant of antiquity, found no difficulty in believing that in Italy, as the poet sings, indigenous nymphs and fauns lived in particular groves. Now, however, poetical license has gone so far that they imagine

things one can scarce bear to listen to. Even within the memory of man, after the production of nations, they say that men have sprung from the earth in different ways: as in Attica, Erechthonius sprung out of the ground from the seed of Vulcan; and in Colchis, or Bœotia, that armed men were produced from dragons' teeth; of whom, the few that remained, after an internecine conflict, are said to have assisted Cadmus in building Thebes. Besides these, a boy is said to have been providentially ploughed out of the ground in the territory of Tarquin, by name Tages, who dictated the art of aruspicy, which was committed to writing by the Lucumos, who then governed Etruria."

So far Censorinus, who wrote about A.D. 238. As a contrast to the pagan method of dealing with this subject, we may glance at the work of Nemesius,* a philosophic Christian, who flourished in the fourth century. It is entitled Περὶ φύσεως ἀνθρώπου, *On the Nature of Man*, and is the first of those wordy psychological treatises which form the staple of the productions of Christian divines upon man,—and perhaps as good as any of them. The circulation of the blood and the functions of the bile are said to be indicated in two very obscure passages, which, however, cannot properly be strained further than to show that there was nothing in the mode of studying medicine in antiquity to prevent their discovery.

A complete summary of the opinions of the ancients on the origin of man has been so well written by Sir M. Hale that I cannot do better than transcribe somewhat largely from his book,† of which the subsequent parts still remain in manuscript.

"There have been among philosophers and other heathen, and some modern writers, two great opinions touching man's origination:—1. Those that thought it indeed to be without any origination, but eternal. Because they thought it proper to make their conclusions consonant to the course of nature which they saw and observed, and judged to be always uniform

* Nemesius, Περὶ φύσεως ἀνθρώπου, Gr. Lat., 12mo, Oxf., 1671; *Engl. transl.*, by George Withers, 12mo, Lond., 1636.

† Hale (Sir Matthew), *The Primitive Origination of Mankind*, etc., fol., Lond., 1677.

and like itself, and in natural appearances, causes, and effects; they thought it not becoming the genius or spirit of a philosopher to call in any other assistant or producent than what was and is the ordinary rule, course, and law of nature, as they now find it. Of this opinion was Ocellus Lucanus, and likewise Aristotle, though in some places he seems to be doubtful; and although Plato, in his *Timæus*, seems to assert an origination of mankind, yet in some other places his expressions are doubtful. And therefore Censorinus, in his golden book, *De Die Natali*, reckons, as well as Plato, as Aristotle, Ocellus Lucanus, Archytas Tarentinus, Xenocrates, Dicearchus, Pythagoras, Theophrastus, to be assertors of the eternity of mankind.

"2. The second general opinion was of those learned philosophers that held an origination of mankind, *ex non genitis;* and the reason moving them to this persuasion was not only the great tradition that obtained generally in favour of it, and the great reasonableness of the supposition itself; but also the many absurd consequences, and indeed irreconcileable contradictions, that they found in the hypothesis of an eternal succession of humane generations, without beginning. And of this latter sort were Epicurus himself, Anaximander, Empedocles, Parmenides, Zeno Citicus, and finally, Moses.

"But in the explication of the cause and manner of this origination of mankind, therein they differed very much among themselves. This difference consisted principally in two great considerations:—1. In the true stating of the efficient cause of this origination of mankind. 2. In the manner, method, and order of such origination. Some assigned a bare fortuitous cause of the first origination of mankind, as Epicurus and Lucretius. Some a natural determined cause of the first production of mankind; namely, the due preparation of the fat and slimy earth after a long incubation of waters, and some admirable conjunction of the heavenly and planetary bodies in some certain periods of time, at a long distance from us, which as naturally and necessarily produced the first couples of mankind, and likewise of other perfect animals, as necessarily and naturally as the return of the vernal sun produceth divers sorts of insects, which, though they are called *sponte*

orientia, yet they arise merely from a connexion of natural causes, and the various ferments and dispositions of the elementary, and positions and influxions of the heavenly bodies. Thus some of the ancients, and also Avicenna, Cardan, Cæsalpinus, Berogardus.

"As to the second, namely, the different manner of the origination of mankind, Censorinus, Eusebius and others, give it as follows :—

"1. The opinion of Anaximander. That he thought, through the agency of heat, fish, or some animals very like fish, were made out of earth and water; that men sprung up inside these, and were preserved like fœtuses therein till puberty; then at last they broke these enclosures and came out men and women able to take care of themselves.

"2. The opinion of Empedocles and Parmenides. First, that separate members were produced, as it were, from the pregnancy of the earth, and then that they came together, and composed the material of an entire man, made up of fire and water at the same time.

"3. The opinion of Democritus and Epicurus. That men were at first created from water and mud: that is, that wombs of warm mud first appeared which adhered to the roots of the earth, and through the ministration of nature afforded some sort of congenital milk to the infants who sprung from it, who brought up in this way, when they arrived at maturity, propagated mankind.

"4. The opinion of Zeno Citicus the founder of the Stoical sect. He thought the beginning of mankind came from the world when fresh, and that the first men were sprung from the sole addition of a divine flame, that is, by the providence of God.

"Ovid, as to the origination of man, seems to agree with the Stoics; but he gives thereof a fuller explication; namely, 1. That it was a seminal production, and not so fortuitous as that of animals. 2. That these *semina humanæ naturæ* were either the immediate productions of the great *opifex rerum*, or at least were left in the earth by the celestial nature, while it stood mingled therewith *in massa chaotica*, by which means, it seems, he thought not that the production of mankind was by

a gradual process and maturation in the earth, and from it like the ordinary course of the formative process *in utero matris*, in the ordinary course of generation, but by a shorter and more compendious method.

"Thus, we have an account of the opinions—1. Of the Pythagorean philosophers; 2. Of the old academicks; 3. Of the Peripateticks, all seeming to agree in the supposition of the eternity of the world; 4. Of the Epicureans, under which I include that of Anaximander and Empedocles, differing only in the *modus;* 5. Of the Stoics, which give a true account both of the origination of mankind, and of the manner of it.

"These several opinions, and the authors and assertors thereof, I shall here farther illustrate and examine.

"1. Touching the opinion of the Pythagoreans, because we have nothing extant of his writings, I can say little more touching his opinion, though some suppose he was not of opinion that the world or mankind was eternal.

"2. Touching Plato, it is true, he seems very various and poetical in his writing; and by reason of the method of his discourses, by way of dialogues, it is hard to determine what his opinion was concerning the eternity of the world, or the generations of mankind.

"In the beginning of his third book, *De Legibus*, but especially in the middle of his sixth, under the persons of Atheniensis hospes, and Clinias, he intimates his opinion of the eternity of the world and mankind.

"'*Athen.* All ought to know that the generations of men either never had any beginning at all, and never will have any end; but always have been, and always will be; or if they did have a commencement, it must have been an inconceivable time before us.

"'*Clin.* Of course.'

"And again, in his *Menexenus*, under the person of Socrates commending the country of Attica,—'Another thing in its favour is, that at the time when the earth was bringing forth animals of all kinds, wild beasts and cattle, our country was in those ways barren and destitute of wild animals, but alone brought forth man, who surpasses the others in intelligence, and alone studies justice and the gods.'

"And again, in his *Timæus*, in the person of Timæus, he gives us an account of the original of mankind and the manner of it to this effect,—'That when Almighty God had made and set in order the great world, and endowed it with a living soul, and thereby it became a great animal, and had also made a sort of inferior deities, and endowed them also with immortality, he brings in the great God bespeaking these inferior deities. Thus, he now gives us an account of the creation of man, namely, of his soul, by the great God.' Therefore, Plato seems not to be reckoned among the firm assertors of the eternity of mankind, nor of the world, and accordingly his follower Proclus herein agrees with his master.

"3. Touching Aristotle and the Peripatetics that were his followers, as Simplicius, Averroes and others (except Philoponus), their opinion seems to be for the eternity not only of the world but of mankind, and of the perfect animals; so that in l. 3, *de generatione animalium*, c. 1, he determines that there was no first lion, etc., and in his way of reasoning follows Ocellus Lucanus, who was a more ancient philosopher, and tenaciously asserted the eternity of the world. Yet Aristotle himself seems not to be over confident of this opinion, but holds it as a problem, and in some places seems to give intimation to the contrary. *Polit.*, l. 2, c. 6, 'Our opinion is that the first men, whether they sprung from the earth, or were engendered by some corruption, etc.;' and in his book, *de gener.*, upon the various productions of the earth and water, 'that in some way all things are full of life;' and in his tenth problem, s. 15, 'there are who say that animated beings first began through some vast change of the world and the universe;' and *Topic.*, l. 1, c. 11, he states the question, 'Whether the world had a beginning or not? to be a problem; wherein probabilities are on either side.'

"By these passages of Aristotle himself, he seems not to be so positive in his opinion touching the eternity of mankind at least; but rather inclines to that for the eternity of generations, upon these reasons. 1. Because he was not willing to suppose any other state of things in the world than what he found; and since he never found any production of mankind,

or the perfect animals, *ex non genitis;* he therefore concluded them to have been ever produced in that method that he found them in the ordinary and settled course of nature. 2. Because, as he was not satisfied with the strange and improbable hypothesis of Empedocles, Anaximander, and Democritus touching the production of mankind, so he could excogitate any of his own which had any clearness or certainty to him, being utterly unacquainted (for aught we know) with the Mosaical hypothesis. 3. Because, he being a great admirer of Nature, and the ordinary proceeding thereof, he was not willing to entertain any such supposition as was not evident, according to the ordinary method of nature, which he so much venerated; especially such as might seem dissonant to his great hypothesis of the eternity of the general frame of the rest of the universe.

"4. Touching the Egyptians and Phœnicians, Cœlius Rhodig., lib. 2, c. 11, says, 'The theology of the Phœnicians and Egyptians used to assert that men and the other kinds of animals crawled out of the earth by chance.' And Diodorus Siculus, lib. 1, says, 'The earth was first slimy and quite soft. Then becoming stricken through the heat of the sun, after its surface had swelled up through heat, humours were collected in many places, and corrupted substances were caused, covered with a slight envelope, just as we see still sometimes happen in the marshes and ponds of Egypt, when the heat of the atmosphere suddenly burns the cold soil. At length these corruptions come to a head, as if the time of parturition had arrived, and the envelopes are thrown off and broken. Out of them came all sorts of animals. Those which had been exposed to the greatest heat, gave birth to flying creatures which went off into the upper regions of the air; those which contained more earth, came out serpents and other terrestrial animals. The offspring of the watery substances were carried to the element of that kind and called fishes; then the soil which was first dried by the heat of the sun, and then by the winds, ceased to generate the larger animals; but those which were already generated procreated others by hybrid unions.' And again, in the same book, cap. 11, 'The Egyptians say that, from the

beginning of the world the first men were created there, both by the richness and fertility of the soil, and through the Nile, which generates many things, and also with great ease nourishes what it has generated; for it affords the roots of reeds, and the lotus and the Egyptian bean, and many other things fit for the food of man. One reason why they think animals first sprung into being there, is because, at this day, in the Thebais, at certain seasons, many great rats are generated. Men are very much astonished, when they see the anterior part of the rats being animated, as far as the breast and the front feet, and the hinder parts not yet begun, and shapeless. From this they say it is clear, that Egypt has produced men from the very beginning of the world, for in no other part are animals produced in this way."

Such, then, were the opinions in common vogue respecting the origin of mankind at the commencement of our era. They were all what would be called in this day highly polygenistic. Shortly after that time, the opinions of Moses became so widely spread that perhaps this is the best place to notice them. The account given in Genesis has generally been understood to mean that all mankind, without exception, have descended from a single pair, and it is almost as generally held that all mankind are also descended from Noah and his children. There is, however, a passage in the *Targum* of Jonathan, which seems to indicate that a different opinion on this point prevailed even among the Jews.

The *Targums* were written either about B.C. 50, or by the Babylonish schoolmen; and, like the *Septuagint*, elaborated by a society or college of *meturgemanin*, who completed these in the fourth century. The passage in question occurs in the *Targum* of Palestine,* p. 162.

"And the Lord God created man in two formations; and took dust from the place of the house of the sanctuary, and from the four winds of the world, and mixed from all the waters of the world, and created him red, black, and white; and breathed into his nostrils the inspiration of life; and there was

* Transl. by J. W. Etheridge, 8vo, London, 1862.

in the body of Adam the inspiration of a speaking spirit, unto the illumination of the eyes and the hearing of the ears." On which Mr. Etheridge makes this remark, "When in the Jonathan *Targum* on Genesis 1, it is said as above, there are intimated, 1. The sanctity of our origin; 2. The oneness of the human race, whether black, white, or red in the mere colour of the skin, formed as all men are from one primitive material; and 3. The Divine design that the whole earth, in all its varieties of climate and locality, should be peopled with men whose physical constitution is adapted to them."

The language of the rabbis is so difficult to interpret by the ordinary rules of common sense, that I think the question as to what they really thought on this subject must remain an open one. There is no doubt, however, that the monogenistic interpretation was the one commonly received by the Christians. And the monogenists and polygenists, as now, divided the Roman world on this subject, until Christianity, combined with a most narrow interpretation of the Pentateuch, was forced upon the European mind. Freedom of thought still existed during the reign of the Emperor Julian. He gives the two opinions with candour and liberality in his letter on the duties of a priest, A.D. 362:—"Man is related, with or without his consent, to every other man, whether, as is said by some, we all proceed from one man and one woman; or whether the gods produced not one man and one woman only, but many at once, in great numbers, together with the world. For they who could create one man and one woman, were also able to create many; and in the same manner that they produced them, they might also produce these. Consider not only the variety of customs and of laws, but which is much more important, more excellent, and more prevalent, that tradition of the gods which has been transmitted to us by the most ancient ministers in things sacred, namely, that when Jupiter formed the world, some drops of sacred blood were spilled on the earth, from which sprung mankind. Thus we are all relations; since from one man and one woman, or from two persons, many men and women have sprung, as the gods declare, and we must necessarily believe on the testimony of

the facts themselves, as we all derive our origin from the gods. That many men were produced at once is testified by facts, but will be more clearly shown in another place."

A.D. 415. Two events happened in this year,—one in the east, and one in the west of Europe, which had the effect of almost entirely crushing all freedom of thought on every speculative question; and anthropology, such as it then was, became particularly obnoxious to the new rule of faith. The first was the murder of Hypatia by the Saint Cyril. Her death has been so well described by Professor Kingsley in his novel, and the result and meaning of Cyril's triumph over truth and its search are so completely deduced by Draper, that I shall say no more on that point.

The second event was a much more silent one, but not less effective for the same purpose. In this year St. Augustine commenced his book, *De Civitate Dei*. It is not, perhaps, too much to say of this work, that it has done more to destroy all love for the investigation of truth, and to retard human progress, than any other composition whatever. Nor was it in reality unsupported by such weapons as those of Cyril. St. Augustine rejoices to inform his readers that the pagans were going to answer his book, but were afraid of the consequences, "and they had better not," says he;—words, the true meaning of which were soon developed by the tender mercies of the Catholic church.

In this book, the doctrine of the descent of all men from Adam is laid down in the most comprehensive terms as an article of faith: "Whatever kind of man,—and by man I mean a mortal rational animal,—has anywhere been born, however unused our senses may be to the form in which he may appear, of whatever colour, gait, voice,—whatever strength, proportions, or natural qualities he may have,—no one of the faithful can doubt that he has sprung from one protoplast," lib. XVI, c. viii. "As, however, to the antipodes they fable,—that is, men on the opposite part of the earth, where the sun rises when it sets for us, whose footsteps tread opposite to ours,—we must not believe on any consideration. They do not say that they know this from any knowledge of facts; but

conjecture it from a process of reasoning, because the earth is suspended between the convexities of the sky, and the world has the same place, both below and in the middle; and from this they think that the other part of the earth, which is below, cannot be without men to inhabit it. They do not consider that even although the world be held to be spherical and round, or can be shown to be so by any process of reasoning, that it does not follow, as a consequence, that the waters are so collected there as to leave dry land; and that even if there is dry land, it does not immediately follow that there must be men on it. Holy Scripture cannot be wrong in any way, for the accomplishment of its prediction compels us to belief in its account of things past; and it is excessively absurd to say that any men could have navigated—could have gone from this part of the world into that—and passing over so vast an ocean, so that mankind, which has descended from that first parent, should also be established there.

And *lib.* XII, c. X, *On the falsehood of that history which allots many thousand years to past time.* "Let us, then, omit the conjectures of men who talk about what they do not understand, when they speak of the nature and beginning of mankind. Some think men, like the world also, have always been in existence. Thus Apuleius: 'Individuals are mortal; but the whole race is perennial.' If, however, mankind is eternal, how can their histories be true, which tell us who were the first inventors of different things, —who were the first founders of liberal studies and other arts, or by whom this or that region, part of the earth, or island began to be cultivated? They answer, that at certain intervals of time deluges and conflagrations have so laid waste not all, but most countries, that men have been reduced to a small number, from whose progeny a great multitude has again arisen. In this way things were founded and instituted, as if originally; whereas, in fact, these were only restorations of what had formerly been destroyed and extinguished by excessive devastations; and that man could only have proceeded from man. They say, however, what they think, not what they know.

"They are deceived by some most mendacious accounts, which profess to contain the history of many thousands of years; whereas we calculate that, according to Scripture, there are not yet six thousand full years from the creation of man. I will not go to any great length to show how the vanity of those writings, which give the transactions of many thousand years, is to be refuted, and how they are of no real authority in a question of this kind. There is, however, a letter of Alexander the Great to Olympias his mother, retailing the account given by a certain Egyptian priest, which he produced from certain writings they consider sacred, and which contains reigns that are mentioned also in Grecian history. Now, in this letter of Alexander, the Assyrian kingdom is made out to be more than five thousand years old; but in the Grecian history there are only thirteen hundred years from the reign of Belus, which king, the Egyptian also gives as the founder of the monarchy. He also made out that the duration of the two empires, the Persian and Macedonian, down to Alexander, whom he was addressing, was more than one thousand and eight years. But the Greeks reckon the Macedonian kingdom, down to the death of Alexander, as four hundred and eighty-five years, and that of the Persians, until the conquest by Alexander, as two hundred and thirty-three. So these numbers of years are much smaller than those of the Egyptians, and do not come up to them even if they are multiplied by three. For it is said that formerly the Egyptian years were short ones, consisting of four months each. So the truer and larger year, such as both we and they have now, would embrace three of those ancient years. But not even in this way, as I said, would Grecian history agree with Egyptian numbers; and therefore more credit is to be given to the Greeks, because they do not go beyond the number of years which are contained in our writings,—the really sacred ones. Besides, if this letter of Alexander, which is specially worthy of notice, differs much in its calculations of time from what is probably the fact; how much less ought we to give credit to those books which are as full of fables as of antiquities, and which some have wanted to put forward against the authority

of those well-known divine writings, which have prophesied that the whole world would believe in them, and in which, as they prophesied, the whole world does believe; and which prove that they have truly the history of the past, from the fact that what they predicted has been so completely fulfilled."

Philosophy, however, and even anthropology, were not left entirely without witnesses in that dark period of a thousand years, during which the writings of Augustine and the Fathers pressed heavily on mankind. Still, it is not the less true that, in the *City of God*, that voice was first heard triumphantly, which ridiculed all the efforts of man to improve his condition, and which might still be as potent as ever, had it not been for the fresh impulse given to the mind of Europe by the introduction of another faith.

Dr. Knox* mentions that it was debated in a council of the church, during the reign of Justinian, whether the Negroes were descended from Adam and could become Christians; but he gives no reference, and I cannot find the authority.

A.D. 412-485. Gibbon says of this period, "The Gothic arms were less fatal to the schools of Athens than the establishment of a new religion, whose ministers superseded the exercise of reason, resolved every question by an article of faith, and condemned the infidel or sceptic to eternal flames. In many a volume of laborious controversy they exposed the weakness of the understanding and the corruption of the heart, insulted human nature in the sages of antiquity, and proscribed the spirit of philosophical inquiry, so repugnant to the doctrine, or at least to the temper, of an humble believer. . . . . About a century after the reign of Julian, Proclus was permitted to teach in the philosophic chair of the academy . . . and ventured to urge eighteen arguments against the Christian doctrine of the creation of the world. . . . The golden chain of the Platonic succession continued forty-four years from the death of Proclus to the edict of Justinian, which imposed a perpetual silence on the schools of Athens, A.D. 529."

A.D. 571-632. Mahomet was so struck with the difference

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* *Races of Man*, 8vo, London, 2nd edit., *App.*

of the species of black and white men, that he did not hesitate to assert that God had made the one of black and the other of white earth. He could not imagine that men so different, not only in colour but also in shape and inclination, could have the same origin.

A.D. 748. In this year we find the practical effect of the dogmas of St. Augustine. Speaking of a certain Virgilius who had the misfortune of being beyond his time, Pope Zachary says:* "As to his perverse and wicked doctrine, which he utters against God and his soul, if it shall be proved that he assert there is another world, and other men beneath the earth, let a council be called by the church, and let him be deprived of the sacerdotal garment; . . . . if he shall be found in error, let him be condemned according to the canon."

A.D. 1110. Again, we find enlightened doctrines trying in vain to make their way. William de Conches, in that year, wrote thus in his book, *De Elementis Philosophiæ*:† "We must not suppose that God took Eve literally from Adam's side. But some one may say, that then more men and women than one might have been created, and may be so still. I say that is true, were such the divine will." And of the antipodes, "Since, as we said before, the temperate portions of the air are two; so also there are two temperate and habitable portions of the earth: one this side the torrid zone, and one on the other. Though both are habitable, the common opinion is that only one, and not the whole of that, is inhabited by men. Philosophers, however, speak of the inhabitants of both, not because they are there, but because they might be. Let us, then, mention those in whose existence we believe through the light of philosophical reading. The habitable part of the earth, in which we are, consists of two parts. For since the temperate atmosphere is on every side of the earth, so on every side of the earth there is a temperate and habitable part. But since the tides of the ocean surround the sides of the earth, according to the horizon, they divide it in two. The upper part of this is inhabited by us; the lower,

* Bonifacii *Epistolæ*, ed. Giles, vol. i, p. 173.
† Printed in Bede, *Opera*, tom. ii, p, 211, etc., Colon. 1612, fol.

by our antipodes. But we cannot go to them, nor they to us." William de Conches was, however, put under the censures of the church, and recanted in the most ample terms.

A.D. 1450. The immense antiquity of the world, if not of man, was asserted by Samuel Sarsa (a Jew) about this time. He was instantly burnt for heresy.*

A.D. 1490. It is a pity that no documents of the learned debate, which was held at the Dominican monastery of St. Stephen, have been left, in order to form a judgment of the state of mathematics and astronomy in that university, so renowned at the day. It is known that Columbus wrote down his theses, exhibited his arguments, and answered all the objections started against his system.†

One of the chief intellectual results of the discovery of the New World was the blow it gave to the authority of the Fathers on matters of science. The existence of antipodes was at all events demonstrated, and at once admitted, even by the most orthodox.

A.D. 1501. The first use of the word *Anthropology*, so far as I know, occurs in this year. A book,‡ under that title, was published at Leipzig. It is, however, purely an anatomical work.

A.D. 1533. Another book, entitled *L'Anthropologia*, was published in this year by Galeazzo Capella.§ He defines anthropology as a discourse upon human nature. It is a fanciful discourse upon personal singularities, in a very verbose and uninteresting style.

It is stated by Dr. Draper, that so long as the Pacific remained undiscovered, and it continued to be thought that America was only a part of Asia, patristic ethnology remained unaffected; and it was not until the voyage of Magellan that the Spaniards considered themselves entitled to exterminate

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* Itaque duxerunt eum ad tribunal et condemnarunt ad supplicium ignis, propterea quod asseruisset antiquitatem seculi coram judicio eorum.—Shickard in *Tarick*, p. 175; ap. *Præad. Utis*, p. 157.

† Munoz (D. J. B.), *The History of the New World*, transl. vol. i, p. 141-2, London, 1797. 8vo.

‡ Hundt, *Anthropologeion*, etc., Leipsic, 1501.

§ Capella (G.), *L'anthropologia ovvero ragionamento della natura umana*, 8vo., Ven. *Ald.*, 1533.

the native Americans, on the plea that they were not descended from Adam and Eve.

But this idea is not borne out by the facts. The destruction of the Americans commenced very soon after the discovery of Columbus. And in 1512, it was found necessary to publish the famous Declaration, that all the Indians were descended from Adam and Eve. Up to that time, no idea had been entertained of the real position and importance of America. The Indians were destroyed by the wanton acts of the Spaniards; though some of the rough freebooters might have denied any affinity with the Indians, no theory on the subject had been raised, and it must have been a mere excuse to palliate their barbarities.

It was in 1513 that the Pacific was first seen; and in the same year Paria was still considered a part of Asia. In 1520, Magellan entered the Pacific; but his vessel did not reach Spain till September 1522. Long before this time the Indians had been destroyed in vast numbers, and the Negro traffic established for some years to supply their loss. It is, however, quite true that the discovery of America gave rise to the first polygenist doctrines of modern times.

A.D. 1520. To Theophrastus Paracelsus belongs the honour of being the first to assert the plurality of the races of mankind. Thus he says,* "I cannot abstain in this place from making mention of those who have been found in the out-of-the-way islands, and still remain, and are to be met with there. No one will easily believe that they are of the posterity of Adam and Eve, for the sons of Adam by no means departed into out-of-the-way islands. It is most probable that they are descended from another Adam. For no one will easily prove that they are allied to us by flesh and blood. Had Adam remained in Paradise, he might have been a very different kind of Adam; but still he would not have been stamped in the image of God,—in the same fashion as these in the new islands. All over the world there are many different kinds of animals,—perhaps, also, many men, about whom I will dis-

* *Philosophiæ Sagacis*, lib. i, c. 11, tom. x, p. 110, ed. Frankf., 1605.

course more at length below." And again: "It cannot be proved that those men who inhabit the hidden countries are descended from Adam; but it is credible that they were born there after the deluge, and perhaps they have no souls. In speech they are like parrots, and have no souls, unless God be pleased to join them in the bonds of matrimony with those who have souls."* And—"If it is objected, that the eternal element, which exists in other forms, is the same from which men are derived; that is not of sufficient importance to prove that all men have sprung from one parent, although from one God, who infused life into all. That God who gives, and has given everything, and who is recognised by philosophy, did not permit such various forms and so many kinds of men to spring from one parent, but from many; nor did he ordain anything monstrous or human contrary to nature. It might, perhaps, seem proper in this preface to count up who was the first parent of the bipeds, if we could go back in calculation to the beginning. That, however, has nothing to do with philosophy, but would be a sort of amusement. Before we can comprehend that first father, from whom all men are sprung, we must manage to get ourselves transported to the time when that event took place."†

Paracelsus says also a good deal to the point about Moses: —"He treated nothing as a physicist, but peculiarly as a theologian. So Moses had the gift of comprehending the creation only in a particular way, and not entirely, according as the necessity of the case required it to be described. Perhaps he did not understand it better, . . . nor was a physicist from his youth up, as they say; so his description is not intelligible to the laity. It would, indeed, be a very poor foundation for the physicist, if he were to believe in the creation of the text according to the interpretation of Moses. For a physicist has not, like a theologian, a mere acquiescent belief, but depends on the proof and the evidence of experience. But Moses, we must observe, wrote theologically, according to the faith for the weaker brethren."‡

* Tom. ii, p. 2. † *Præfatio altera in lib. de generatione hominum.*
‡ *Liber Azoth.*, p. 108.

A.D. 1591. Bruno, in his book *De Universo et Immenso*, says, —"No sound thinking person will refer the Ethiopians to the same protoplast as the Jewish one." He alludes to the Rabbinical idea of three races; and states that the Chinese, also, referred man to three protoplasts.

A.D. 1616. Vanini, in his Dialogues,* says, "Others have dreamed that the first man has taken his origin from mud, putrified by the corruption of certain monkeys, swine, and frogs, and thence (they say) proceeds the great resemblance there is betwixt our flesh and propensions, and that of those creatures. Other atheists, more mild, have thought that none but the Ethiopians are produced from a race of monkeys, because the same degree of heat is found in both. . . . Atheists cry out to us continually, that the first men went upon all four as other beasts; and 'tis by education only they have changed this custom, which, nevertheless, in their old age, returns to them."

This last paragraph seems to refer to the ancient riddle; but this is the earliest notice, so far as I know, of the idea that man is actually descended from, or allied to, the monkey.

A.D. 1655, Peyrere (Isaac). In this year was published the work entitled *Præ-Adamitæ*, in which Peyrere endeavoured to prove that Adam and Eve were not the first human beings upon earth. The first creation of man, he thought, took place many thousands of years before Adam, and in this way he accounts for the origin of the Gentiles. He further observes, that the people of the New World could not have been the descendants of Adam, but must have sprung from the pre-Adamites. The reception this book met with will best be understood by reading extracts from contemporary letters. Ismael Bullialdi writes:†—"I know Peyrere, the author of the book on the pre-Adamites. Eight years ago he showed the book to a good many persons; but all advised him not to publish it, because in it were put forward and maintained opinions not only unknown to all Christians, but diametrically

* C. Vanini, *De admirandis naturæ reginæ Deæq. mortalium arcanis*, lib. iv, *dial.* xxxvii, Paris, 1616.

† *Vir cl. Is. Bullialdi Epist.*, Dec. 1655.

opposed to the Christian faith. He was, however, so delighted with this conception of his genius, that he preferred to cherish it, and bring it to light rather than conceal it." John de Launoy also writes from Paris at the same time:—"As soon as ever the book *De Præ-Adamitis* arrived here, it was prohibited by the authority of the préfet, and burnt. This kind of punishment brought the book a reputation a hundred times greater than it deserved. It began to be sold at a higher price; and because it ought to have been treated with contempt, it was sought for, and read all the more eagerly. Prohibition only injured the frugal and parsimonious book collectors, and no one else."

The literature on the pre-Adamitic heresy is voluminous; and a tolerably complete catalogue of the answers made to Peyrere, will be found in the work of Fabricius, of which more below. I will only quote a short passage from one of his most zealous antagonists,* to whose work the preceding letters will be found annexed. "The profane and impious book ought to have been put out of the way in eternal night. Now, printed in three ways, it has scarcely seen the light, but in a moment has flown over the whole Christian world, and in truth has been, to speak correctly, snatched at rather than sold. Such is the world. Truth and hoary faith are despised: men run after fables and new glosses."

A.D. 1655. It is in this year that the word *Anthropology*, so far as I know, was incorporated into the English language. The title of a book, which is anonymous, runs thus:—*Anthropologie abstracted; or, the idea of Humane nature reflected in briefe Philosophicall and anatomical collections.* Its nature will be seen from the opening paragraph: "Anthropologie, or the history of human nature, is, in the vulgar (yet just) impression, distinguished into two volumes: the first entitled *Psychologie*, the nature of the rational soule discoursed; the other anatomie, or the fabrick or structure of the body of man revealed in dissection . . . of the former we shall in a distracted rehersall, deliver our collections."

* J. H. Ursinus, *Novus Prometheus Præ-Adamitarum plastes*, etc., Frankf., 1656.

A.D. 1677. Hale's book,* though entirely in support of the Mosaic account, is written with very great liberality and learning. He states expressly that the recent discovery of America had induced many to doubt the descent of all men from one pair; and enters at length upon the question of how America could have been peopled. I have already quoted largely from his account of the opinions of the ancient philosophers on the origin of mankind. The book is well worth attention, even at the present day.

A.D. 1684. In this year was printed, in the *Journal des Savans*, an anonymous letter containing an attempt at a classification of mankind, though without any speculations as to the single or other origin of man. A translation of the whole letter is to be found at the end of this article.

A.D. 1685. In the year following, Calovius published his *Θαυματανθρωπολογία*.† This book is a perfect storehouse of bibliographical and physical information about all that had been written, or fancied, or observed, up to that time, on all that then constituted anthropology. The subjects of giants and dwarfs, satyrs, monsters, wild men, etc., are investigated at length.

A.D. 1695. In this year were published *Two Essays*, etc., by L. P., an English M.A. As this book is very rare, I have reprinted that part which concerns us; it is so sensible, and might seem so easily to have been written at the present day, that I am sure we shall all feel proud of this early, though anonymous, anthropologist.

The seventeenth century closes with the publication of Tyson's book‡ on the comparative anatomy of man and the ape,—a subject which has recently become of such great interest.

In leaving with this author the seventeenth century I may

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* Hale (Sir M.), *The primitive origination of mankind considered and examined according to the light of nature*, fol., Lond., 1677.

† Calovii (M. Christ.), *De Θαυμ., vera pariter atq. ficta tractatus historico-physicus*, p. 85, Rostock, 1685.

‡ *Orang-outang, sive homo sylvestris: or, the Anatomy of a Pygmie compared with that of a monkey, an ape, and a man*, etc., by Edward Tyson, M.D., 4to, Lond., 1699.

mention that I have examined about fifty or more treatises, principally academical dissertations, whose titles promised to yield something for my subject. But notwithstanding such expressions as *On the fourfold origin of man;** *On the wonderful diversity of man;*† *On the difference of the human face,*‡ etc.; I do not think I have omitted any that are worth notice. Most are anatomical or physiological; and those which aim at something more, generally set out by proclaiming the intention of the writer to do anything rather than differ from the text of scripture, or the authority of the church: and are in consequence, in one word, worthless. Thus, for example, take the treatise written in 1704 by Harald Wallerius of Upsala, entitled *De varia hominum forma externa.* It is praised by Blumenbach, but seems to me a very ordinary scholastic performance, starting with the descent from Adam and Eve, and accounting for all differences in that spirit. And again in 1709, Thomas Jacobæus of Copenhagen wrote his treatise *De distinguendis cadaveribus per crania."*§ This title also is very disappointing. It only points out the distinction between the skulls of old and young, male and female. In the last section he has some rather interesting remarks on the practice of artificially distorting the shape of the head by ligaments, or other means; and quotes at length the well-known passages of Herodotus and Hippocrates.

The eighteenth century soon produced a very different class of writers; but in the beginning of it, before the publication of the work of Linnæus, the same spirit prevailed.

A.D. 1721. In this year Bradley‖ gave a short classification of mankind. It is this. "We find five sorts of men: the white men, which are Europeans that have beards; and a sort of

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* Acosta (Nonius), *De quadruplici hominis ortu,* 4to., Pat., 1594.

† Wezelius (Just.), *Oratio de mira hominum diversitate,* 4to., Nurimb., 1706.

‡ Merbitz (Joh. Valen.), *Discursus de varietate faciei humanæ,* 4to., Dres., 1676.

§ I am indebted to the kindness of the Chevalier Thomsen, of Copenhagen, for a beautifully written MS. of this rare treatise, from the copy in the Royal Library. I have since found there is another copy in the British Museum, where, by a strange arrangement, it is entered in the catalogue under the name of the respondent, Schurmann.

‖ *A philosophical account of the works of nature,* 4to., Lond., 1721.

white men in America (as I am told) that only differ from us in having no beards; the third sort are the Malatoes, which have their skins almost of a copper colour, small eyes, and straight black hair; the fourth kind are the Blacks, which have straight black hair; and the fifth are the Blacks of Guiney, whose hair is curled, like the wool of a sheep, which difference is enough to show us their distinctions; for, as to their knowledge, I suppose there would not be any great difference; if it was possible they could be all born of the same parents, and have the same education, they would vary no more in understanding than children of the same house."

In the same year John Atkyns was on his voyage to Guinea, where he made this observation, "Though it be a little heterodox, I am persuaded the black and white race have, *ab origine*, sprung from different coloured first parents".*

And in his *Navy Surgeon*† he says, "From the river Senegal in Africa 15° N. to almost its southern extremity in 34°, they are all black and woolly, the natural cause of which must ever perplex philosophers. I know Malpighius, and from him and others, ascribe these different colours in men to a tinge from that reticular or mucous substance under the cuticle, not considering the question as strongly returns: How even that should become so oppositely coloured as it does, in this remarkable division of mankind into blacks and whites? . . . . From the whole I imagine that white and black must have descended of different protoplasts, and that there is no other way of accounting for it."

In this year also appeared the dissertation of Fabricius, of which a translation is annexed; but I will first mention the curious pamphlet published—

A.D. 1732, *Co-Adamitæ;* this essay is anonymous, and founded upon the words of scripture like that of Peyrere, from which it principally differs, as may be gathered from the title, by supposing that the creation mentioned in Genesis, c. i, included other men and women besides Adam, who were inferior

* Atkyns (John), *A Voyage to Guinea*, etc., *in* 1721, 1st ed., 1723, 2nd ed., p. 39, Lond., 1737.

† *Navy Surgeon*, 2nd ed., Lond., 1737, App., pp. 23, 24.

to him, and to Eve who was created alone immediately afterwards.

A.D. 1738. In this year was issued the second edition of the treatise of Fabricius *On the human inhabitants of our globe who are of one and the same species and origin*. It appears in the collected edition of his treatises with additional notes and remarks. I have thought that a translation of it would be the fittest conclusion to an account of early anthropology. That of Calovius is much longer and richer in bibliographical and antiquarian matter, and in some respects might seem better adapted for the purposes. But it is not so important from an anthropological point of view. The question of the origin of mankind is not alluded to, or taken as a matter of course, and it is much more verbose and full of repetitions. But above all, Fabricius marks the termination of an epoch. During the interval which elapsed between the publication of the two editions, Linnæus, in 1735, had issued his *Systema Naturæ*, in which man was for the first time treated zoologically. Though Fabricius notices the trifling pamphlet, *Co-Adamitæ*, yet he takes no notice whatever of Linnæus. It is quite impossible that he could have been unaware of such a book as the *Systema naturæ*. His silence is therefore very remarkable, and must be attributed to the fact that he felt his weapons to be utterly unfit for encountering an antagonist of that kind. A favourable specimen of the arguments almost universally prevalent during the seventeenth century, the essay of Fabricius may be considered as at once their summary and their last utterance.

Appendix I.

Journal des Scavans. Monday, April 24, 1684.

A new division of the earth, according to the different species or races of men who inhabit it, sent by a famous traveller to Mons. , nearly in these terms.

Geographers up to this time have only divided the earth according to its different countries or regions. The remarks which I have made upon men during all my long and numerous travels, have given me the idea of dividing it in a dif-

ferent way. Although in the exterior form of their bodies, and especially in their faces, men are almost all different one from the other, according to the different districts of the earth which they inhabit, so that those who have been great travellers are often never mistaken in distinguishing each nation in that way; still I have remarked that there are four or five species or races of men in particular whose difference is so remarkable that it may be properly made use of as the foundation for a new division of the earth.

I comprehend under the first species France, Spain, England, Denmark, Sweden, Germany, Poland, and generally all Europe, except a part of Muscovy. To this may be added a small part of Africa, that is, from the kingdoms of Fez, Morocco, Algiers, Tunis, and Tripoli up to the Nile; and also a good part of Asia, as the empire of the Grand Seignior with the three Arabias, the whole of Persia, the states of the Grand Mogul, the kingdom of Golconda, that of Visapore, the Maldivias, and a part of the kingdoms of Araucan, Pegu, Siam, Sumatra, Bantan and Borneo. For although the Egyptians, for instance, and the Indians are very black, or rather copper-coloured, that colour is only an accident in them, and comes because they are constantly exposed to the sun; for those individuals who take care of themselves, and who are not obliged to expose themselves so often as the lower class, are not darker than many Spaniards. It is true that most Indians have something very different from us in the shape of their face, and in their colour which often comes very near to yellow; but that does not seem enough to make them a species apart, or else it would be necessary to make one of the Spaniards, another of the Germans, and so on with several other nations of Europe.

Under the second species I put the whole of Africa, except the coasts I have spoken of. What induces me to make a different species of the Africans, are, 1. Their thick lips and squab noses, their being very few among them who have aquiline noses or lips of moderate thickness. 2. The blackness which is peculiar to them, and which is not caused by the sun, as many think; for if a black African pair be transported to a cold country, their children are just as black, and so are all

their descendants until they come to marry with white women. The cause must be sought for in the peculiar texture of their bodies, or in the seed, or in the blood—which last are, however, of the same colour as everywhere else. 3. Their skin, which is oily, smooth, and polished, excepting the places which are burnt with the sun. 4. The three or four hairs of beard. 5. Their hair, which is not properly hair, but rather a species of wool, which comes near the hairs of some of our dogs; and, finally, their teeth whiter than the finest ivory, their tongue and all the interior of their mouth and their lips as red as coral,

The third species comprehends a part of the kingdoms of Aracan and Siam, the islands of Sumatra and Borneo, the Philippines, Japan, the kingdom of Pegu, Tonkin, Cochin-China, China, Chinese Tartary, Georgia and Muscovy, the Usbek, Turkistan, Zaquetay, a small part of Muscovy, the little Tartars and Turcomans who live along the Euphrates towards Aleppo. The people of all those countries are truly white; but they have broad shoulders, a flat face, a small squab nose, little pig's-eyes long and deep set, and three hairs of beard.

The Lapps make the fourth species. They are little stunted creatures with thick legs, large shoulders, short neck, and a face elongated immensely; very ugly and partaking much of the bear. I have only seen two of them at Dantzic; but, judging from the pictures I have seen, and the account which I have received of them from many persons who have been in the country, they are wretched animals.

As to the Americans, they are in truth most of them olive-coloured, and have their faces modelled in a different way from ours. Still I do not find the difference sufficiently great to make of them a peculiar species different from ours. Besides, as in our Europe, the stature, the turn of the face, the colour and the hair are generally very different, as we have said, so it is the same in other parts of the world; as for example, the blacks of the Cape of Good Hope seem to be of a different species to those from the rest of Africa. They are small, thin, dry, ugly, quick in running, passionately fond of carrion which they eat quite raw, and whose entrails they twine round their

arms and neck, as one sees here sometimes with our butchers' dogs, that they may eat them when they want; drinking sea-water when they can get no other, and speaking a language altogether strange, and almost inimitable by Europeans. Some of the Dutch say they speak *turkey*.

The remarks I have made also on the beauty of women are not less peculiar. It is certain that beautiful and ugly ones are found everywhere. I have some very handsome ones in Egypt, who recalled to my memory the beautiful and famous Cleopatra. I have also seen some very handsome ones among the blacks of Africa, who had not those thick lips and that squab nose. Seven or eight of them whom I met in different places were of a beauty so surprising, that in my opinion they eclipsed the Venus of the Farnese palace at Rome. The aquiline nose, the little mouth, the coral lips, the ivory teeth, the large and ardent eyes, that softness of expression, the bosom and all the rest, is sometimes of the last perfection. I have seen at Moka many quite naked for sale, and I may say that I have never seen anything more beautiful; but they were very dear, for they wanted to sell them three times dearer than the others.

I have also seen very handsome women in the Indies, and may say that they are beautiful brunettes. Amongst others some are coloured of ever so little a yellow, who are very much prized, and whom I found also very much to my taste; for that shade of yellow is vivid and brilliant, and has none of that ugly and livid paleness of jaundice. Imagine to yourself a beautiful and young French girl, who is only just beginning to have the jaundice, and instead of that sick, pale visage, and those yellowish eyes, dull and languishing, give her a healthy face, soft, laughing, and beautiful brilliant and very amorous eyes, and you will have as near an idea of them as I can give you.

The Indians are quite right in saying that you do not find handsome women in the countries where the water is bad, or where the soil is not vigorous and fertile. In fact, the goodness of the water, and that of the diet, doubtless, have a great deal to do with beauty. It is not, however, generally true,

that wherever these two things are found, there the women are always handsome. In my opinion, that depends upon some other conditions, which make beauty more scarce and more dispersed about. It arises not only from the water, the diet, the soil, and the air, but also from the seed which must be peculiar to certain races and species.

The women who live in the Ganges at Benares, and downwards towards Bengal, are generally esteemed. Those of the kingdom of Cashmere are still more so; for besides being as white as those of Europe, they have a soft face, and are a beautiful height; so it is from there that all those come who are to be found at the Ottoman Court, and that all the Grand Seigniors keep by them. I recollect that as we were coming back from that country, we saw nothing else but little girls in the sort of cabins which the men carried on their shoulders over the mountains. But although the women of Lahore are brown like the rest of the Indian women, still they seemed to me more charming than all the others; their beautiful figure, small and easy, with the softness of their faces, quite surpassed by a great deal that of the Cashmerians.

It cannot be said that the native and aboriginal women of Persia are beautiful; but this does not prevent the city of Isfahan from being filled with an infinity of very handsome women, as well as very handsome men, in consequence of the great number of handsome slaves who are brought there from Georgia and Circassia.

The Turks have also a great number of very handsome women; besides those of the country, who are by no means ugly, they have those Greek beauties of whom you have heard so much said, and besides that an immense quantity of slaves who come to them from Mingrelia, Georgia, and Circassia, where, according to all the Levantines and all the travellers, the handsomest women of the world are to be found.

Thus the Christians and Jews are not allowed to buy a Circassian slave at Constantinople. They are reserved for the Turks alone. When our friend speaks of them he is in raptures, and declares he has seen nothing so handsome in Europe. I shall say nothing of European beauties, you doubtless know as much of them as I do.

Appendix II.

Two Essays, sent in a letter from Oxford to a Nobleman in London. By L. P., M.A. London, 1695.

The second part of the first Essay concerning the peopling and planting the New World, and other remote countries.

The design of this second part is not to calumniate or diminish the authority of Moses, who, without dispute, was one of the greatest and wisest legislators that ever appeared in the world, not excepting Solon, or Lycurgus, or Numa. He brought a wandering idolatrous nation to the worship of one true God, and established many excellent laws amongst them. He adapted his history of the creation and deluge to their capacities; and therefore it can be no crime, in one who is no Jew, to comment a little upon some parts of it, with a Christian plainness and a philosophical liberty founded upon nature herself.

The West Indies, and the vast regions lately discovered towards the south, abound with such variety of inhabitants and new animals, not known or even seen in Asia, Africa, or Europe, that the origin of them doth not appear to be clear, as some late writers pretend; especially seeing there are no records or monuments of their transmigrations out of Asia, or any other known parts of the world, either before or after the flood; and their differences from all the rest of the globe in manners, languages, habits, religions, diet, arts, and customs, as well as in their quadrupeds, birds, serpents, and insects, render their derivation very obscure, and their origine uncertain, especially in the common way, and according to the vulgar opinions of planting all the earth from one little spot.

The great zeal to maintain a Jewish tradition, put many learned Christians upon the rack to make it out. Every corner is searched to find out a word, a rite, or a custom, in order to derive from thence many millions of different people. Some will have Norway, others Tartary and China, or some western parts of Africa, to be the sources and seminary of creatures unknown and strange to those climates. The Welchmen are not wanting in their chimeras of peopling Mexico

with their colonies; and perhaps they have better authority than any can be produced for the rest. The Spaniards, because they found some sticks and pieces of wood laid crossways, would needs have the Indians to be of Spanish extraction. The Jews fancied the Americans to be circumcised (their prepuces being only eaten with the pox), and therefore would have them to be of Jewish race. But we will examine the chief of these opinions with brevity and perspicuity.

From Norway, the navigation is very difficult, even to our new strongly-built ships; the vast islands of ice and the weather in those seas must have been invincible to the little boats or vessels of those days; and the journeys over land through England are impracticable by reason of the mountains and rocks of ice and snow; besides, there is a great difference in the colour, numbers, in the customs and mechanics of the natives of Canada, New England, Virginia, etc., and of the Norwegians: no footsteps of Christianity to be found amongst the Northern Indians, which are said to transmigrate in the ninth or tenth century. All nations agree in some words and in some customs; therefore a resemblance, in a few of them, is no proof. But further, John de Laet assures us that, with great diligence, he found a Mexican dictionary, but could not observe any words to agree with any European language. Besides, many writers who resided a long time in the West Indies, affirm that there are so many different languages and dialects in the same kingdom, that one province doth not understand another, even in Peru and Brasil; and along the banks of the single river of Amazons there are above one hundred and sixty different tongues and nations, composed of infinite numbers of various people; so that this country, with Peru and Mexico, might contend with any in Asia, not only in their inhabitants, but in their manufactures and mechanics, as well as in their civil governments; and they might, with the same reason, boast of their giving birth to us as we to them.

The origin of most, if not of all nations, is wrapt up in fabulous traditions; records and monuments are of later dates; and when we offer at the beginnings of things, we are swal-

lowed up and lost in the darkness and depth of time. Arts, inventions, and many other things, might be lost in the universal devastations of countries, and sometimes revived again in revolutions.

The passage from Tartary into America is as obscure as that from Norway, and the same difficulties lie against it; the stretching of the Tartarian capes are unknown; but if they should be joined to the back of Northern America, the journey would be very dangerous (if not impossible) to colonies. The Tartars abound more with horses than all the world besides, and cannot subsist without them; therefore it is very improbable that they should swarm into America on foot (when they ride in all other parts), and their offspring should be so affrighted with the sight of a Spanish horse that one thousand Tartar Indians should run away from a single mounted cavalier. The land in Tartary, said to be the high road for this transmigration out of the Old into the New World, runs further north than Nova Zembla, or Greenland; and how the animals, that cannot endure the extremity of cold, should climb over inaccessible mountains of ice and snow, for many thousands of miles together, is hardly explicable to any thinking man; and that those creatures that live in the frozen continent, should not be able to travel along with tender strangers and delicate passengers, is scarce credible; horses, ermines, and sables (that abound in Tartary), might have found a way much more easily than Indian creatures. A man must press hard to strain Brasil, Peru, and Mexico, through frozen seas or congealed deserts, made up of snow from the beginning, and covered with night for half the year.

Neither is it probable that either Norwegians, Laplanders, Muscovites, Tartars, or the people of Jesse, should carry along with them ravenous beasts or venomous serpents, or such animals as never flock into their countries, as lyons, tigers, alligators, monkeys, apes, parrots, etc.

Navigations from China, through the South Sea to America, are impossible to the jonks of that kingdom, which cannot carry provisions for long voyages; besides, the northern parts of the South Seas are too high for them, and the trade-winds

always contrary at east in the latitudes of Peru and Mexico. The compass (necessary in such sorts of sailing by long sea) could not be known to the Chinese in those ages; besides, the language of China consists all of monosyllables, whereas those of Mexico and Peru have many. The Indians knew nothing of style, pen, ink, paper, or any manner of writing (so common in the east), but reckoned the antiquity of time by strung beads, knots, and pebbles; they had neither bellows, saws, nor nails, though plenty of iron ore in the country; but they knew not the way of separating, so long practised in the Old World, before their traditional passage out of it.

From the western coasts of Africa the sailing is more easy, but then the natives are most Negroes, or much blacker than the Americans, who have long hair, little or no beards, and are of an olive colour.

But to come closer to the matter: the Americans had neither horse, nor our sort of cow, sheep, nor our barking dogs, nor knew the use of iron: 'tis wonderful they should carry so many fierce and destructive creatures along with them, and leave the mild and useful ones behind; but more wonderful they should exhaust the Old World of many species of animals, never found in it since (nor perhaps before) their generally believed transmigration. 'Twill be hard to make any man (moderately vers'd in the history of nature) confess that the Pacos, or Glama of Peru, or that the manati (a biped animal), or many other creatures peculiar to the West Indies, should travel from Asia (where they never were observ'd to exist) by, I know not what ways, into a strange world, and all to support an old Jewish tradition. 'Tis unaccountable that the four-footed beast, commonly called the Ignavus, or sluggard (that lives most upon trees, and cannot march above forty or sixty yards in a day), should get into America from Asia, where no man ever saw it; and that neither jacals nor musk deer (nimble vagabond creatures), nor rhinocerots, nor elephants, nor camels (itinerant animals) should ever slip over into the New World by the same paths or ways that the others went, which have left none of their kind behind them.

But then suppose that America was stock'd some time or

other (in the days of Arthur) from Norway, Tartary, China, Land of Jesse, or Africa; yet, how came those myriads of people and new animals (perhaps strangers not only to the Old World but to the New itself) into those immense countries south-west and south-east of America, discovered more lately by Ferdinando Quir, Van Diemen, Tasman, and others? The Indian canoes could not transport them over such boysterous long seas; and the lands about the Straits of Magellan are so desart that they could not afford such mighty colonies; neither can we fetch them from the capes of Africa or Asia. I see no way at present to solve this new face of nature by old arguments fetch'd from eastern rubbish or rabbinical weeds, unless some new philosopher starts up with a fresh system; in the mean time, let them all be aborigines.

Some object that America, in former times, was join'd to Asia and Europe by large necks of land of easy passage, which which were afterwards broke off by earthquakes, storms, or inundations; but this is begging of the question without any manner of proof: suppose the fact was so, yet it gives no tolerable account why the animals of the New World should differ in *specie* from those of the Old; and the Americans themselves may, with the same probability, affirm that they planted Asia by these ways, seeing they were equally, if not more populous, and excelling in morality and mechanick arts: for the first Spanish writers tell us they were amaz'd at the fineness and contrivances of the Indian works; especially their artificers in golden and silver wares, their spinnings, and weavings, and joinery, etc., for which Benzo and Garcilasso de la Vega may be consulted.

But we will give all the rope and scope imaginable to the Mosaick history of Adam's calling all the animals together and naming them, and afterwards Noah's taking every species of them into the ark to preserve them in the deluge; yet their dispersion into America and the Terra Australis, by unknown passages, will scarce solve the difficulties in stocking the remote islands with men, and other living creatures, above one thousand leagues distant from any land; as the Azores, Bermudas, the isles of the South Sea, etc., most of which abound

with natives, quadrupeds, birds, and insects, different in specie from those of the next continents or Terra Firma.

A learned writer urges, that the Americans could be of no long standing there, because the Mexicans and Peruvians could give no account of their being there above one thousand years before the Spanish invasion; which is a very strong argument against himself, considering they had not the use of letters (which, methinks, they might have brought with them from the Old World), nor ciphers, nor any way of registering but by beads or stones. Besides, several European nations can give no account of themselves for the first four thousand years: what know we of Britain before Julius Cæsar? or of Greece itself before the Trojan war?

I am not ignorant that some late philosophers will have the new animals in America either to be generated equivocally there, or else to proceed from various mixtures of animals sent from hence; but this hypothesis is of dangerous consequence even to our own history of the Old World, and may evert the Mosaick system here at home; for if there are equivocal generations (especially in the most perfect kinds) or new species produced every day, what need of a settled uniform creation, and such a distinct number of every species of animals in Paradise, or in Noah's ark? But, besides, equivocal generations do not only tend to atheism, but are evidently exploded by demonstrative experiments: and as to promiscuous generations (commonly call'd hebridous) between distinct kinds, they can never propagate, as we see in mules, etc.; and 'tis easily proved that there can be no propagation of any new species, but that the number of creatures, as to their kinds, have always been the same from the beginning.

As many difficulties lye against the Mosaick system, of confining all species of living terrestrial creatures within the Asiatick, or primæval Paradise, and afterwards to Noah's ark; so more seem to arise against the propagation of all mankind out of one single male and female, unless all posterity, both blacks and whites, separated by vast seas, were all included actually in form within Adam and Eve.

The origin of Negroes lies obscure; for time out of mind there hath been blacks, with a woolly substance on their bodies instead of hair, because they are mentioned in the most ancient records now extant in the world. 'Tis plain their colour and wool are innate, or seminal, from their first beginning, and seems to be a specifick character which neither the sun, nor any curse from Cham could imprint upon them.

Not the first, because many other nations living under the same climates and heats, are never black, as the Abyssines, the Siamites, the Brasilians, Peruvians, etc.; neither will any white ever become a black in Guinea, Congo, or Angola, though born there; neither will any Negroes produce whites in Virginia, or New England. The textures of their skins, and blood, differ from those of whites.

Not the latter: for what curse is change of colour, that being only accidental to beauty which consists wholly in proportion and symmetry? The old statues in black marble are as much, if not more, valued than those in white. Besides, the curse upon Cham's account must have turned many of the Asiaticks, and all the Egyptians, into Negroes; for they were curs'd more peculiarly than the western remote coasts of Africa.

This colour (which appears to be as ingenite and as original as that in whites) could not proceed from any accident; because when animals are accidentally black, they do not procreate constantly black ones (as the Negroes do), as in dogs, cows, sheep, and in some birds: accidental colours vary in the same numerical subject by changes of seasons, of diet, of culture, etc.; but a Negro will always be a Negro, carry him to Greenland, give him chalk, feed and manage him never so many ways.

Constantia semina rerum.

Appendix III.

Dissertatio Critica de hominibus orbis nostri incolis, specie et ortu avito inter se non differentibus quam in auditorio gymnasii Hamb. ad D. viii April, Præside Jo. Alberto Fabricio, *SS. Theol. D. Prof. Publ. et H. T. Gymnasii rectore Defendet publice autor respondens Vincentius Rumpf, Hamburyensis,* A.D. 1721.*

CHAPTER I.

Of the opinions and arguments of those who maintain that our world contains different species of men of different origin.

1. Those who pay no attention to Moses, must necessarily hold one of three opinions about the origin of mankind; they must suppose that men have always been in existence from eternity, or that they sprung out of the earth in many places at many times like mushrooms or blite, or that God has produced men here and there in various places at various times. But those philosophers† who dream about the eternity of successive generations, whether emanating from or without God, are refuted by nature and reason; for no succession or alteration can take place in that which is eternal; for what a thing has been from all eternity, that also it must remain to all eternity.

The eternity of mankind, like that also of the earth is refuted by the recent date of all history, and even by tradition, which in all nations goes no farther back than a few thousand years; so that it is not only impious but foolish to believe the dreams of those who despise religion, but quarrel with each other, and refuse credit to Moses, who at so short an interval after the deluge taught to a populous nation things to which all mankind bore witness, and who assigns an origin to mankind agreeably to his nature and the world at large, and worthy of the Creator. Some say that broods of men have often and in many places sprung out of the earth, like the mice in the Thebaid,‡ or that human bodies are produced like mushrooms

* This is a reprint of the title page of the first edition. The translation is from the second edition of 1738.

† August. Steuchus, lib. ix, *De perenni philosophia*, and Censorinus, *De die natali*, c. iv.

‡ Diod. Sic., lib. i, near the beginning. Bayer, *Museum Sinicum*, t. ii, p.

by the rain, or as Democritus says in Lactantius, viii, 7, that they have been generated like worms out of the ground, without any maker, and according to no plan. Such opinions are sufficiently refuted by the fact, that after so many thousand years no place can be shown in which this has occurred, or where, setting aside man, the earth has produced dogs or any large animal, or any kind of cattle or wild beast. Many have demonstrated the incredibility of theories so contrary to nature, and so destitute of testimony as these things, which some have not only taught, but perhaps almost gone beyond honesty in inventing; and especially the famous Sir Matthew Hale in his book on the origin of mankind,* which has recently been translated from the English into our vernacular by H. S. Schmettau and the author himself, at the command of Frederick William, Elector of Brandenburgh.

2. The opinion remains of those men, who think that God created not one only, but many men, either at once, as the Emperor Julian tries to prove, or at intervals and according to circumstances. Let us hear Julian:—"Every man, whether he likes it or not, is bound by ties of relationship to every other. Whether, as some think, we are all descendants from one pair, or whether we have been brought to light in some other way, as if the gods have produced us all at once, with the world itself from the beginning, not one male and one female, but many pairs at the same time. Those who could produce one pair, could with equal facility have produced many at the same time, for in the same way in which they made

278; and Casp. Schotte, *Physica curiosa*, lib. vii, p. 843. According to Lactantius, vii, 4, the Stoics thought "that men were generated in every country, in the fields, like mushrooms." Comp. Lipsius, *Physiologia Stoica*, lib. iii, c. 3. On the story of the inhabitants of Guyana in South America, see *Mem. de Trev.*, 1723, p. 454. Some find no difficulty in believing that men may be generated by art; but this dream of Paracelsus has been exploded by Kircher, t. ii, *Mundus subterr.*, p. 279.

* The German title of this book is *Der erste anfang oder das ursprungliche herkommen des menschlichen geschlechts.* Coloniæ ad Spream, fol. 1683, and 8vo, Uratislav, 1685. Cardan also, *De Subtilitate*, lib. ix, maintains, that man may spring from dung like small animals, against which view see J. C. Scaliger, *De Subtilitate contra Cardan. Exercit.*, 193, p. 627. Besides Cardan, see A. Cæsalpinus, lib. v. *Quæst. peripat.*, c. 1. On the ancient nations, comp. *Traité de l'opinion*, t. ii, p. 174. Many opinions about the origin of mankind seem to come to this; see them in Censorinus, *loc. cit.*, c. iv, p. 26; and Buddæus, *Hist. Eccles. V. T.* P. 1, p. 77.

one pair, they might have made many. And any one will be more readily of this opinion, who takes the pains to observe the variety of manners and laws; and still more if he considers that report of the gods, which is of greater and more cogent authority, and which has been handed down by the old theurgic administrators of the sacred rites."

So keen was the hatred of Julian to Christianity, that without any reason of any weight he prefers the testimony of the oracles which were said by some philosophers to be Chaldean, and were included amongst the *ineffable things*, but were not held in high esteem by the Gentiles, to the authority of the Mosaic writings, which are much older, and depend upon very different arguments and evidence. How weak it is to conclude, from an observation of the diversity of men's manners and laws, that they could not be descended from one parent, but must have had many. Not to bring here too many instances to disprove the arguments of Julian, let me point out how different at once were the habits of the brothers Cain and Abel, and under what very different laws the other sons of Noah and Ham lived, or the sons of Isaac, Esau and Jacob. Let us, however, listen to this tradition of the theurgi, which Julian is so glad to prefer to the Mosaic history.

"At the time when Jupiter arranged all things, drops of holy blood fell on the ground, from which sprung mankind. Thus, then, we are all mutually related to each other, whether we all spring from one male and one female, a single pair in fact of mankind; or whether there were many, and we come from many, as the gods witness, and we may easily believe from the testimony of things themselves—at all events we all derive our origin from the gods.* I will show more clearly in another place that nature and facts go to prove that a number of men sprung into being at once. In this place it will be sufficient to observe so much; if we were sprung from one pair only, laws would not have been so various and contradictory, nor could the whole earth have been replenished by one pair, even if women produced several children at a birth as we see

* *Fragmenta*, p. 181, *Operum*.

pigs do. For it is the case universally, that with the concurrence of the gods, in the same way as some say a single pair, a number of human beings sprung suddenly into existence, and were set down as the creation of the gods, who manufactured them after they had received their souls from the Demiurgus for ever."

I do not remember that Julian fulfilled his promise of advancing further proofs on this point, at least in his extant writings. As to the argument which he brings here, taken from the idea, that the whole earth could not be replenished by the offspring of one pair, it seems very weak to any one who recollects the longevity of the first men, and knows what a marvellous and almost incredible multitude may in the space of a few centuries only be produced by a very moderate prolificacy. Besides, let any one consider the monuments of history, and the migrations of nations, and the countries which have been occupied sometimes by one and sometimes by another, and at last after the lapse of time found full of inhabitants. Moreover, we know that many countries and many large islands are even now destitute of inhabitants, whereas this would at no time or anywhere be the case, if God the Creator had simultaneously created and located men as denizens of every place and every region.

3. In the recollection of our grandfathers Isaac Peyrere dared to bring on the scene his *Præ-Adamitæ*.* In a book of two parts printed in the year 1655, he attempted by many arguments perverted from Scripture to prove a thing which had never been heard of before, and which seemed incredible to

* Comp. J. T. Schudt, *Jewish Wonders*, p. 539; *Unsch. Nachr.*, 1703, p. 825; 1704, p. 584. The opinion of Origen that one man was made in the image of God and another from the slime of the earth, is considered by Huet in his notes to Origen, p. 63, to point to the opinion of the Præ-Adamites. But Origen seems to me to distinguish the body from the mind, considering the latter to be the first created, see *Origeniana*, p. 92. But lately (1732), a book has been published in London in English, under the title *Co-Adamitæ*, or an essay to prove the two following paradoxes: viz., 1. That there were other men created at the same time with Adam; 2. That the Angels did not fall. See *Tubingisches Gelerht. Journal*, t. i, a. 1734, p. 114. The author of the book *Cosri*, p. i, s. 61, mentions a similar opinion, and so does Maimonides in *Morch Nebuchim*, but disapprovingly. So that Peyrere was wrong in claiming the support of the Jews. See the whole system of præ-Adamitism in a narrow compass, by Jurieux, *Hist. critique des dogmes*, P. i, c. 25.

almost every Jew and Christian, out of the many who, during the lapse of two or three thousand years, had consulted the sacred writings, and which was not only opposed to them, but received no colour of support from any argument or any reliable monuments of historical record. He himself wanted to put as a worthy and convenient title to his book, according to Claudius Sarravius, *Epist.*, p. 74, the *dream* of a Gascon nobleman. Finally, whether voluntarily and sincerely, or, as others say, under compulsion, but at all events publicly, he recanted and abjured his book in his letter to Philotimus, published at Paris in 4to, 1658, and reprinted the same year at Frankfort.

The writers who have not only exploded this dream, but put it down by solid arguments and logic, if I may be allowed to take this opportunity of supplementing and correcting the list given by Lipenius in his *Bibliotheca Theologica*, are the following. Amongst our own people, the famous theologians, J. Conrad Danhauer, in his book called *Præ-Adamita Utis, or the Fable of Primæval Men created before Adam, exploded*, 8vo, Argentor., 1656. Jo. Micræl on the monstrously foul opinions about præ-Adamites, 4to, Stettin, 1656. Mich. Cobab, in his disputation on Romans, cap. v, against the præ-Adamites, 4to, Rostock, 1656. J. H. Ursinus, on the New Prometheus, bound again in the form of the præ-Adamites, 12mo, Francof., 1656. Sam. Schelwig, *Dissertation on the Præ-Adamites*, 4to, Helmst., 1656, 12mo, Amst., 1656, and 12mo, Ultraject., 1656. Barth. Goldbach, in his oration delivered at Regiomontanum, and in a dissertation which was read in 1682, Mich. Hoynov being the respondent, on the question whether there were other men before Adam. H. Christoph. Engelke in his examination of the new excrescence of præ-Adamitism, which, under the presidency of J. Fecht, B.D., he delivered at Rostock., 4to, 1698 and 1707. D. Ab. Calovius, *System.*, t. iii, p. 1049-1074. J. A. Quenstadius, t. i, p. 513-516; Zach. Grapius, *fascie. controvers. exotic.*, loc. v, error. 2, and *theologia recens controversa continuata*, cap. iv, qu. 1, p. 100. J. Hulsemann, *Opp. posthum.*, p. 1155. Jo. Müller, *Atheismus devictus*, p. 171. Jo. Lassen, *ib. append.*, qu. 1. Frid. Bechmann, *Theolog. polemic. loc. controvers.*, 6,

etc. Conr. Dieteric. *Antiquitat. Bibl.*, t. i, p. 76. A. Caroli, *Memorabilia Sæculi*, xviii, t. ii, p. 122. Joach. Hildebrand, *Theologicæ dogmaticæ*, p. 152. Dan. Hartnacc, *Continuat. hist. eccles. Micrælianæ*, p. 2186. Nic. Ridemann, in *Syntagma theologicum*, Rost., 4to, 1659, and Jul. Ed. Tiemann, of Schæning, in *Pentas diss. stipendii Velthemiani, cum præf. J. A. Schmidii*, 4to, Helmst., 1716.

Of the Reformers, Ant. Hulse, *Non ens præadamiticum*, Lugd. Bat., 12mo, 1656. Sam. Mares, *Refutatio fabulæ præadamiticæ*, 4to, Groning., 1656. Gregor. Stannarius, *Fasciculus disp.*, Cassel, 1665. *Disp. contra præadamitas*, p. 115. Guil. Salden, *Otia divina*, lib. i, *exerc.* v. F. Spanheim, fil., *Diss. de statu instituto primi hominis*, opp., tom. iii, p. 1248; Matth. Hale, *On the primitive origination of mankind*, p. 666. Is. Vossius, *De* LXX *interpretibus*, p. 281. Joanes Pyth., *Responsio exetastica ad tractatum, cui titulus præ-adamitæ*, 12mo, Lugd. Bat., 1656. Franc-Turretin, *Institut. theologicæ elenchticæ*, t. i, p. 503. J. H. Heidegger, *Hist. Patriarch.*, p. 1, *exerc.* iv Franc. Burmann, *Synopsis Theolog.*, t. i, p. 314.

Neither our people nor the reformers can claim Paul Felgenhaur, *Der prüfung über das Lateinische buch* præ-Adamitæ, 12mo, Amst., 1659.

Finally, among the society of the Roman church, *Eusebius Romanus*, or Philip le Prieur, *Animadversiones in librum de Præ-adamitis*, 12mo, Paris, 1656, 8vo, 1658. Jerome Bignon, Ismael Bullialde, and Jo. Launoy, in letters subjoined to the book of J. H. Ursin, above mentioned. Natalis Alexander, *Hist. Eccles. Vet. Test.*, t. i, *diss.* iii, p. 57-66; Richard Simon, *Epistolæ selectæ, Gall., editæ*, t. ii, epist. i, iii, iv. J. B. Morin, *Astrologiæ Gall.*, l. ii, c. 35; and Math. Petidier, *Diss. historico-critic. in S. Script.*, 4to, Paris, 1699, p. 120.

Those who want to know more of Peyrere himself, may consult, besides the Simon I was just praising, Will. Patin, t, i, epist., p. 454. Bayle's *Lexicon*, the fourth and much enlarged edition, art. *Pereire*. D. Theoph. Spizel, *Infelix literat.*, p. 827. T. Creen, in notes to D. O. Strauch, *Diss. de epocha mundi conditi*, t. ii, *fascis exerc.*, p. 8; and Tho. Bang, *Cælum orientis*, p. 134.

4. Lastly, I must say something of those who—influenced by the varying forms of man and the different appearance of his body, or arguing from the distance of countries which could have no intercourse in early times on account of the vast expanse of the ocean,—deny it to be possible that all are derived from one common parent, but either believe, with the Negroes,* that at least two kinds of men were at first created by God; or with Theophrastus Paracelsus,† that, in the beginning, two Adams were made out of the earth by God,—an Asiatic and an American one. I say nothing of the other beings, who seem rather genii than men, whom the same Paracelsus,‡ and after him the Count de Gabalis, make mention of, and of whom, according to him, the Pygmies or Kobolds, and Gnomes, are located in the bowels of the earth, the Nymphs and Undines in the waters, and the Sylphs and Melusinæ in the air, and the Vulcans and Salamanders in the fire. Giordano Bruno,§ of Nola, lib. vii, *De Universo et immenso*, etc., p. 622, says, "It is said in the prophecies, and is a common-place of the Jews, that all races of men are to be traced to one first father, or to three, as we learn from the Hebrew records (he refers to the apocryphal Esdras, lib. 4, c. vi, p. 49, which, however, has a very different meaning when attentively examined, and is opposed to Bruno‖), of which some trace

* Will. Bosman, *Voyage to Guinea*, etc. xv lett., p. 149. "The Negroes believe that God created in the beginning black men as well as white men to people the world together . . . . they say that God having created these two species of men, offered them two presents, namely, the possession of gold, or the knowledge of reading and writing; and as God gave the choice to the blacks, they chose gold, and left the knowledge of letters to the whites; God granted their request, but was irritated at the greediness they showed for the gold, and decreed at the same time that the whites should have perpetual dominion over them, and that they should always be their slaves."

† Th. Paracelsus, *De philos. Occulta*. lib. i, c. 1, t. x, ed. Francof., 1603, 4to.; Conringius, *De medicina hermetica*, p. 349.

‡ Paracelsus, *Liber Philosophiæ de Nymphis, etc.; De homunculis*, t. ix; Gisb. Voet, *Diss. Select.*, p. 738; W. Salden, *Otia Theolog.*, p. 65; Jo. Hornung, *Cista medica*, p. 191; On the Marburg Nymph, *Wasser-nixe*.

§ Comp. Heumann, *Acta philosoph.*, xi, p. 798, 820.

‖ The words of the pseudo-Esdras are: "And then thou didst preserve two souls, one of which thou calledst Henoch (a mistake for Behemoth), and the name of the second Leviathan. But on the sixth day thou didst command the earth to bring forth before thee cattle and beasts, and reptiles; and besides these, Adam, whom thou didst make the ruler over all the things thou hadst made, and from whom we are all descended, the people whom

the only superior kind, that of the Jews, to one protoplast, and the other nations to the two first, who were created two days before. The traditions of the lately discovered Chinese reckon three protoplasts, of different names, twenty thousand years ago.* No one of sound judgment can refer the Ethiopian race† to that protoplast. Just in the same way the earth produces all kinds of animals,‡ as appears from inaccessible islands; nor was there only one wolf, lion, or bull, from whom all lions, wolves, and cattle are sprung, and transported to all islands, but in every part the earth, from the beginning, has yielded all things. Then it came to pass that some remained in some places, and were destroyed in others; as in England wolves and foxes and bears, in the progress of cultivation, and in some other islands men, on account of the force of more powerful wild beasts, or through want of nourishment."

Thus also the same author, lib. i, *On the Monad Numbers and Figure.*§ "The regions of the heavens are three, of the air, three, of the water three: the earth is divided into three parts; and when mother earth first produced the animals, the three races had three progenitors,—Enoch, Leviathan, and Adam the third, according to the creed of the greatest portion of the Jews, from whom alone were descended the sacred race."

And lib. vii, p. 620, "Add, also, when the deluge shall sweep all these away, parent nature will produce, without the process of copulation, perfect animal forms. For the species

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thou hast chosen." As to the Jewish story about the enormous beasts, Behemoth and Leviathan, of which a vestige appears in the Targum Jonathan to Genesis i, 21, and in the second Targum to Esther, iii, 7, it has been repeated by many from the Talmudic traditions in the *Bava bathra*, c. 5; but the Jews never even dreamt for a moment that it had anything to do with mankind,or anything they were connected with. Perhaps the whole passage about Behemoth and Leviathan has been interpolated in the fourth book of Esdras by a more recent hand, for it is altogether wanting in the Arabic version.

* It has been shown by Isaac Jaquelot, *Diss. sur l'existence de Dieu*, p. 257, not to mention any others, that this antiquity of the Chinese (like that of the Egyptians and other nations), so much beyond our traditions, is a false and unfounded boast.

† On the Ethiopians, see below, c. iv.

‡ This not true of the larger animals, that they appear everywhere spontaneously; nor is it proved that they may not formerly have been transported into the islands where they are found, though these may now have no human beings in them.

§ *De monade numero et figura*, p. 39.

of men are of many colours; and the black race of the Ethiopians, and the yellow offspring of America, and the watery race which lives hidden in the caves of Neptune, and the Pygmies, inhabitants of the veins of the earth, who pass their time shut up in the hills, and the keepers of the mines, and the gigantic monsters of the south, tell no tale of one and the same descent, or that all are sprung from the generative force of one first parent. Every island everywhere can give a beginning to things, although the same form is not everywhere preserved the same, for one species flourishes in one place, and one in another."

5. In the miscellanies of Leibnitz, which were lately published under the title of *Otia Hanoverana*, by J. F. Fell, it is mentioned (p. 158), that a division of men into five species, or races, by a celebrated traveller, was sent to the Abbé de la Chambre, and was published in French, without the name of the author, in the *Journal des Savans* for April, 1684.* "The first contains the men of Europe, except part of Muscovy. To these I add the African coast, from the Nile to the columns of Hercules, the empires of Turkey, Persia, the Mogul, Golconda, Visapur, Maldivia, part of the regions of Arakan, Pegu, Siam, Sumatra, Bantam, Borneo. It cannot, indeed, be denied, that the Indians differ a good deal from us, but not sufficiently so as to make them a different species. The second species is that of the Africans: large lips, nose turned up and flat, in some very few instances moderately sized lips, and aquiline nose. Blackness, not from the sun, but congenital; because those who go to a foreign country retain it, unless they form mixed marriages. Smooth, polished, soft, and as it were oily skin, except in the places where the sun has as it were scorched them. Beards of scarce three or four hairs; the hair of the head like wool, or of those dogs called sheep-dogs. Teeth whiter than ivory; tongue of a coral redness. The third species occupy part of the kingdoms of Arakan, Siam, Su-

* P. 148, ed. Amst. I say nothing of the passage in the journal of the Baron de la Houtan in North America, t. i, epist. 24, p. 347. *Nouv. de la Rep. des Lett.*, 1703, p. 85, and the answer of Jacob Bernard. Stuck, on *Arrian's Periplus of the Red Sea*, p. 105, mentions white-skinned, flat-nosed, stunted, and broad men, etc.

matra, Borneo, the Philippine or Manilla Islands, Japan, Pegu, Tonkin, Cochin-China, China, Chinese Tartary, the Ganges, and Muscovy, Usbek, Turkistan, Zagatay, part of the Muscovite empire, European Tartary, and the Turcomans who dwell towards the Euphrates and Aleppo. All these are white in colour, with large shoulders, flat face, small nose, eyes small and pig-like, and few hairs in the beard. The fourth species are the Lapps. These are little dwarfs with thick legs, large shoulders, short neck, face savage, like bears. The fifth are the Americans, nearly olive in colour, and the face very different from ours in its crested appearance.* The Caffres at the Cape of Good Hope are very different from other men; lean, dry, small, ugly, active, devourers of raw meat and corpses, so as even to string the intestines of animals round their necks, in order to enjoy those delicacies at pleasure. They even drink sea-water, if there is no other. Their language is so peculiar that no European can possibly learn it, and the Dutch say it is like the clucking of the turkey."

It was this passage which the illustrious Leibnitz no doubt referred to when, in the same Miscellanies, p. 37, he makes mention of a division of this kind, but at the same time acutely says that there is nothing in it to prevent all these men, although differing in form, from having sprung from one root and origin. "I recollect reading somewhere, though I cannot find the passage, that a certain traveller had divided man into certain tribes, races, or classes. He made one special race of the Lapps and Samoides, another of the Chinese and their neighbours, another of the Caffres or Hottentots. In America, again, there is a marvellous difference between the Galibs or Caribs, who are very brave and spirited, and those of Paraguay, who seem to be infants, or in pupilage all their lives. That, however, is no reason why all the men who inhabit the earth should not be of the same race, which has been altered by different climates, as we see that beasts and plants change their nature, and improve or degenerate."

* The skull of a North American is described in *Mémoires de l'Academie des Sciences*, 1722, p. 445, and *Journal des Sav.*, 1726, p. 497. As to their common origin, see J. Woodward, *Letter on the Origin of the Americans* in *New Memoirs of Litt.*, t. iv, p. 315.

CHAPTER II.

Concerning those things which have been falsely related about the form of men, which seems as if they ought to be considered as fables, and also of those born from demons, and of tiger men and syrens, and other incredible stories.

1. In order to make my train of argument more clear, I shall observe that the objections which are brought against the common descent of man from Adam, deduced from his external form, are of four kinds, and therefore ought to be distinguished and answered separately. Some are fabulous and falsifications, which I shall treat of in the present chapter; others are true, but either have nothing to do with men, or are monstrosities, and at variance with the ordinary routine of nature, and yet cannot form any objection to our common descent from Adam; of which in the succeeding chapter. Others rest upon the smaller or greater differences to be found in the stature, or the colour, or the appearance of human bodies; which, however, ought rather to be referred to climate and diet, than to different origins from different protoplasts; of which in the fourth chapter. Others finally spring from the manners and institutions of mankind, as I will show in the fifth chapter.

2. First of all I shall speak of the Blemyæ, a barbarous people of Africa as they say, who according to Mela, lib. i, c. 8; Pliny, lib. 5, c. 8. and Solinus, c. 44, have no heads, their eyes and mouths being located in the breast, about whom the sermon to the brothers in the desert, which is attributed to S. Augustine, says: "Now, when I was Bishop of Hippo, I journeyed with other servants of Christ into Ethiopia, in order to preach there the Holy Gospel of Christ; and there we saw many women and men who had no heads, but great eyes located in the breast, and in their other members like ourselves. And we saw in the lower parts of Ethiopia men with only one eye and that in the forehead, whose priests avoided all intercourse with men, etc." But the real Augustine in *The city of God*, lib. xvi, c. 8, does not say that he saw them himself, but only says that they were mentioned in Gentile histories and were depicted at Carthage in mosaics, in a passage where he also mentions other fabulous kinds of men. Thomas

de Pinedo, ad Step. Byz., p. 169, says: This puerile fancy about the Blemyæ our friend Don Jos. Ant. Gonzalo de Salas tries with all his might to prove to be true in his learned illustrations of Mela, lib. i, c. 8, written in Spanish; and even the metamorphosis of men into wolves on Mela, lib. ii, c. 1; nor was I ever able to tear him away from these absurdities, so that the learned should not laugh at him. As for myself I never could help laughing when he talked of paradoxes of this kind in his *Museum.*" Vopiscus in *Probus*, c. 17. "He also subdued the Blemyæ, from whom he sent captives to Rome, who showed their marvellous appearance to the wondering populace of Rome." He does not, however, say what the Romans saw to be astonished at, and some say that when they are said to have no head, it is meant that they were without sense or intelligence, as Harduin observes on Pliny, t. i, p. 549, or that on account of their short neck and high shoulders they seemed to have no head.*

3. As to the Nisicastæ or Nisitæ, who were said to have three or four eyes, and to inhabit the same Africa close to the maritime Ethiopians, we know from Pliny, vi, 30, that this was said of them, "not because they were really so, but because they shoot their arrows with marvellous accuracy;" or as Solinus, c. 30, says, "because they see very well, and direct their arrows most accurately." So also, when in the same passage Pliny says, "that the King of the Blacks had but one eye in his forehead," we may suspect this idea arose from the fact that people had seen the forehead of the black man shining with a precious stone. And the fact shows that a similar explanation may be given of those people without a neck whose eyes were in their shoulders, whom Augustine saw in mosaic at Carthage. As to the Cyclopes with one eye in their forehead, and the Arimaspi, formerly celebrated in song by Aristeas of Procone, and who are spoken of by Herodotus,† Strabo,

* See J. F. Lafiteau, *Mœurs des Sauvages*, t. i, p. 62, 67; t. iii, p. 19; and comp. M. Mappi, *Hist. Medica de Acephalis*, Argentin., 4to, 1687, and *Nouv. Rep. des Lettres*, 1687, p. 1064.

† Herod., iv, "for the Scythians call one *arima*, and the eye, *spou*; comp. Petr. Petit, *De Anthropophagis*, c. vii, p. 291.

and others, when they speak of the Scythians, Adam Brem places them in the extreme north; which J. Scheffer, in his *Lapponia**, c. xvii, p. 209, thinks is done because among the Lapps, who are clothed all over in skins, no open spot can be detected except the hole in the blanket through which they look, all the rest being hairiness. Muretus, however, xii, 8, *Var. lect.*, thinks they were called *one-eyed* or Arimaspi, because they shut one eye in taking aim.

4. The Panotii were so called as if they were all ears; by Strabo *enotokoitoi*, as if they slept wrapped up in their ears; by Tzezes for the same reason *otoclinoi*. On them see Isidorus, xi, 3, *Etymolog.* Salmasius, p. 219 b. on Solinus. Happel., *Relat. cur.*, t. 4, p. 68, and Rabanus Maurus, lib. vii, *De universo*, c. vii, Op. t, i. p. 122, who says: "They say that the Panotii in Scythia have ears of such enormous magnitude that they cover the whole body." So also the Fanesii in Pliny, iv, 13, and Silenus, c. 13. To these add what is said in the *Geographia Nubensis, Climat.* vi, p. 9,—"The inhabitants of the land of Magog are all very short in stature, so much so that the men do not exceed the measure of three palms, and likewise the women, and they are all covered with an enormous quantity of wool, and have large pendulous ears." By the inhabitants of the land of Magog, Olaf Rudbeck is convinced (*Atlantica*, P. iii, c. 10) that the Laplanders are meant, and the small stature spoken of exactly answers to that of the Lapps, although perhaps it has been reduced below the exact truth; and also the hairy or downy body, that is, being covered with skins, as a protection against the cold.†

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* Comp. Dacier ad Horat., lib. 1, Od. iv, 7, t. i, p. 90. On the Lapps, consult Happel, *Relat. Curios.*, t. ii, p. 81. Beyerlinck on the word *oculus*, p. 38 b. Herod., iii, 116, considers this story of the one-eyed nation of Arimaspians as a fable.

† Esau was hairy all over, Gen. xxv, 25. See Scheuchzer, *Physica Sacra*, tab. lxxxiv. Hanno also speaks of wild men, with skins like wild beasts; and in other place of women with hairy bodies. So Orion, with his sword, was thick set with hair all over, according to J. C. Capacci, *Antiquit. Neap.*, c. xv, p. 126. *Thesauri Italiæ*, t. ix, p. 11. Here, too, must be arranged what Herodotus (iv, 105) says about the Nervi, a people of Scythia (from whom Nerva in Lithuania derived its name, according to Philip Melancthon), that the men every year became wolves, and afterwards returned to the form and appearance of men,—the fact being that in winter time they were clad in wolves' skins. On satyrs, and the fictitious tailed nations,

As to the ears, what does J. Esberg Rudbeck say in his *Diss. de Pygmæis,* published at Upsal, 8vo, 1783. "It is quite clear that they have ears exactly like other men, and the reason why people ascribe to them such long ones is that the Lapps in winter time wear cloaks, on each side of which long flaps hang down. Some also draw a Lapland hood, *lappmudd,* over the head, and by withdrawing their arms make the sleeves pendulous; these have been supposed to be ears partly through ignorance, and partly as a joke." The accompanying engraving borrowed from Rudbeck shows this very clearly.

5. In Mela, iii, 6; Pliny, iv, 13; and Solinus, c. xix, islands are mentioned, in which men are born who are called *horse-footed;* not, as we may presume, because they have horses' feet, but on account of their rapidity in running. Augustine, *De civit. Dei,* xvi, 8, says,—"They also tell of a nation who have all their legs in their feet, and no joint in their knees, and are of wonderful quickness of foot; they are called *shade-footed,* because, when they lie on their backs in the heat, they protect themselves with the shadow of their feet."*

6. It would be tedious to speak of other fabulous nations of men whose feet are on the back of their legs, or who have but one eye, and large feet like those of geese, or protect themselves from the heat by the shade of their feet, or the *Astomi,* who have no mouth and live entirely by smell,; and others who are mentioned by Pliny, vii, 2. Gellius, ix, 4. Solinus, c. 52. Isid. of Spain, *Origines,* xi, 2. R. Maurus, *De universo,* lib. vii, c. 7; about all of whom Augustine† justly observes.

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see Is. Schoock, Prof. Frankf. on the Oder, *Hist.-Crit. Physicum,* lib. 1, c. v and vi, 4to, Frankf. ad. Oder, 1680. Pausanias, in *Atticis,* p. 55, describes the inhabitants of the Satyræ islands as *red-haired, and with tails on their behinds, not much smaller than horses.*' But Lafiteau has shown the origin of these mistakes, *Mœurs des Sauvages Américains,* t. i, p. 31. "The Caribs, and the other American savages, are generally covered with the skins of wild beasts, whose feet they let hang down behind, and the tail on their backs. The Caribs and the tribes of the continent *roco* themselves, that is to say, paint themselves red; the former have their skins reddish, which is in part the effect of climate." The case of the hairy man born in Brazil, from a baboon or large ape and a woman, is quite different. Comp. Gemelli Carreri, *Voyage autour du monde,* t. iii, p. 152.

* Ctesias on Harpocration, about the *shade-footed*; Megasthenes on Strabo, lib. ii, c. 70. † *Loc. cit.*

"But it is not necessary that all these kinds of men we hear of really exist." They have been represented in some very ridiculous drawings in the *Chronicum* of Hartmann Schedel, and in the *Physica curiosa* of Casper Schotte, but were long ago set down as fables by Strabo, lib. ii, c. 70.*

Apollodorus on Tzetzes, *Chil.*, vii, v. 761. "Those men half dogs, and the stories of pygmies, just like those who cover themselves with their feet, and who have eyes in the breast, and the dog-headed with the one-eyed men, and the crook-shanked and the crook-legged; those who bear but one at a time, and likewise those with no nostrils and no mouth, and those who have their toes at the back of the leg, and those who never laugh." Some, perhaps, have been said to have eyes in the breast, from the appearance they present with their very short neck and high shoulders, as Hugo Grotius towards the end of the fourth book of his *Histories*, speaking of the inhabitants of the extreme north, says,—"Other stories are fabu-

* Minucius Felix, c. xx, p. 184, ed. Gronov., "Prodigious wonders are easily credited, which, if they had been done, could be done; but as they cannot be done, are not done." J. G. Rabener, *Amœnit.*, p. 53, defends the monsters of Herodotus by the testimony of modern travellers, Merian, Schmiedel, etc. Comp. Pictorius on Pliny, *Nat. Hist.*, lib. vii; on man, and the wonderful shapes of nations; and the notes of D. G. F. Seeligman, in his dissertation on ambiguous men, in whom the human and brute form is commingled. See *Neuerbücher-saal*, t. i, p. 635; and Harald Valerius, *Diss. de varia hominum forma externa*, 4to, Upsal, 1705. On the Cynocephali and Lycocranitæ Procop., *Gothic.*, iii, 27, p. 530. On the Cynocephali; also, Aristot., ii, 8; Gellius, ix, 4; Aldrov., ii, 7. On viviparous quadrupeds, Rhodiginus, xxv, 8. Salmasius on Solinus, p. 1005. J. E. Nieremberg, *Hist. Nat.* v, 15; and the letter of Ratram to Rimbert on the Cynocephali whether they are descended from Adam, or whether they have the souls of beasts; MS. in Bibl. Paul., Leipzig; published also by Oudin, *De S. E.*, t. ii, p. 125, with the Letter of Gabriel Dumont; but Oudin says, t. ii, p. 337, that the letter of Rimbert refutes the argument. On the Macrocephali, see Olear. ad Philost. s. 134. On a man with a bird's head, Kircher, *China illustrata*, p. 270. On ass-centaurs and horse-centaurs, Aldrovand., p. 198. On solid-footed quadrupeds, p. 490. On men who are dormant in the winter, but warm up and revivify in the spring, *Journ. des Sav.*, 1725, p. 270, as the himadines, on whom see Flechier, in the Life of Cardinal Commendoni. Against the stories of women said to be fertile without copulation, Alphons. a Carranza, *De part. leg. et Naturali*, p. 707. On the man made by Simo Magus, *Clementina*, ii, 26, p. 628. On the human figure in the egg of a fowl, *Journ. des Sav.*, 1681, p. 331, 278; in a radish, *ib.*, 1677, p. 62; and *Acta. Nat. Cur.*, i, p. 121, 229. *Giornale di Roma*, 1677, p. 62. On the anthropomorphous fungi, *Act. Nat. Cur.*, i, 112, p. 89. [On men with ears so large that one could cover five or six men, see Padre Fray Simon. *Noticias Historiales sobre la conquista de Tierre Firme;* and on men who pass the whole day under water. —T. B.]

lous; that the people of Leucomoria pass the winter in a state of death, and recover their lives with the breath of spring, since, when the facts are ascertained, they refer only to a change in the customs of the inhabitants. Then men with hairy bodies and a kind of dogs' faces, are not less idle than the inventions of the ancients, who located in the same regions nations with horses' feet, and others whose ears enveloped their whole bodies —in other respects naked, for the history of these things generally ends in prodigies and false reports. Some of them, however, I would not altogether deny, which rest upon better testimony; such as headless men whose faces are in their breast, for either these may exist, or may appear to be so, from the shortness of their necks and their high shoulders, as I know that nature often goes very much astray in some places through excessive heat, and in others through the extremes of cold."

7. I regret that I have not yet received the first volume of the academical dissertations of the most noble Hyacinth Gimmi, Neapolitan jurisconsult, founder of the Ruscian Society of Virtuosos, printed at Naples in 4to, 1714. For as I learn from the *Diar. Venet.*, t. xx, pp. 154-64, there are two dissertations in it, one about fabulous men, and the other about fabulous animals,* or a fabulous generation of animate things from inanimate objects. The dissertation about the fabulous men is divided into three parts; in the first chapter of the first part he lays down that the race of man is one; in the second he explodes the fictitious men of Paracelsus and T. J. Burrhi, about whom you may consult if you like Bayle's *Lexicon*, art. Borri, c. 3, is about the fictitious men said to be produced by chemistry, or after the manner of plants. There is also a treatise of A. C. Gakenholz, published at Helmstadt in 1710, about the imitation of the machine of the human body by some supernatural art; c. iv, is about the men fabled to be born out of the ground; c. v, about monstrous men mentioned in fables. In c. i, s. 2 of the second part, he discourses about the giants and their origin, etc.; c. iii, about the giants mentioned in the book of the pseudo-Enoch; c. iv, about the

* On these in the same journal, *Giornale de' litterati d'Italia*, t. xxi, p. 176; on the other writings of H. Gimmi, see *Gel. zeit.*, 1725, p. 186.

upper and under demons; and c. v, about the post-diluvian giants. Lastly, in the third part, c. i, is about the Centaurs; c. ii, about the Satyrs; c. iii, the Cynocephali, and other men who are said to have shaggy and hairy hides; c. iv, on the Tritons, Sirens, and fabulous water-men; c. v, on the fabulous men of the poets. Finally (c. vi) he asserts that there are demons who are given out as men of revolting shape, and speaks of the transformation of men into wolves.

8. But we cannot allow that evil spirits have such power as to be able to turn men into wolves, bears, or other beasts; and in the same way we must set down as fables what is reported contrary to the laws of nature by Delrio* and others about demons and their monstrous offspring, or about children changed by the demons, or the change of sex by their aid, and other things which repose on no good testimony, and are opposed to the goodness and wisdom of providence. But it is no use spending any more time on these things. Pliny, viii, 22, remarks well on transformation. "We ought either resolutely to disbelieve that men can be turned into wolves, and restored again to their own shape, or else to believe all the fabulous stories concocted from all antiquity." How much, however, both ancient and modern writers have laboured to prove this story, and trusted in the credulity of their readers, may be seen from the dissertation of James Thomasius on the transformation of men into brutes, published at Leipzig in 1665.

9. Finally, as to the Sadeurci, the tiger-men,† and the fawns and satyrs of the poets; and the scylla, half virgin and half sea-dog; and the nereids, beautiful women above, and terminating below in a fish; the girls half birds; the stymphalides, sirens, and harpies; the men half oxen and the oxen half men, and the centaurs; he who can believe such ever lived among

* Delrio, *Disquisit. Mag.*, lib. ii, quæ. 22. Colven on *Nideri formicarium*, p. 64. Comp. especially the *Plutonicum Anthropodemum* of J. Prætorius; *Von allerlei wunderbaren Menschen*, 8vo, Magd., 1668; on subterranean men, Kircher, *Mund. Subter.*; and H. Gautier, *Bibl. Philos.*, t. iv, p. 625; on the upper and under demons, *Act. Nat. Cur.*, ii, 6, p. 348; on men changed into wolves, *Bibl. Germanique*, t. ii, p. 38.

† P. Kolbe, *Description of the Cape of Good Hope*, p, 351. The Caffres, or Tigermen, *Recherches Historiques*, p. 205.

men, will find no difficulty at all in thinking everything true that is said even about the chimæra*. I have thought it worth while to give here engravings of Scylla, the nereids, the stymphalis, sirens, and harpies, because they are confounded even by learned men sometimes. I found the harpy with a centaur on an old monument of the famous Welpho, one of the Burgundian nobles, in P. Saxius in the diocese of Arles, p. 202. Another figure of the harpy is given by Ez. Spanheim, *Diss. V, de usu numism.*, t. i, p. 620, ed. London, and by L. Beger, *Thesaur. Brandenb.*, t. iii, p. 371, where also is to be found both a winged and a wingless sphinx, and a monster with the head of a man and the body of a dog, p. 369-370. I took the figure of the siren from the *Diarium Italicum* of the learned Montfaucon, p. 191, who found it in the MS. Catena of the Colbert Bible on Job, c. xxx, v. 29, "I am become the brother of the sirens;" though the Hebrew word means rather dragons, who are likewise coupled with ostriches in Micah i, 8. See Voss, *De idololatria*, iv, 50, and Bochart, *Hierozoicon*, P. II, lib. vi, c. 8. I have added three sirenes† from the Iliac table illustrated by Beger, pl. 69, and Pedrusio, *Numism.*, t. ii, p. 149. The scylla, stymphalis, and nereid from Spanheim, pp. 262, 256, 153. Scylla is also on a coin of Gordian,

* An old bronze chimæra is preserved in the *Bibl. Medicea* at Florence, which J. Rhodius, *Sylloge Epist. Burmann*, t. v, p. 442, bids Nic. Heinsius examine particularly, because an inaccurate copy is given by Alrov. *De Quadrup.*, lib. i, p. 56. There is also a diss. of Pet. Penaværus on the chimæra, 4to, Berol., 1703. See the notes of J. le Clerc on Hesiod, *Theogn.*, v, 319, and *Acta Erud.*, 1703, p. 273.

† The Sirens are called, by Procopius on Isaiah, p. 215, "the birds known to sing well," and p. 492, "by some sweet-voiced birds whom he called sirens." Julian, *Epist.* 41, "Why should I speak of the Sirens, of whom such of the muses as conquered them still bear a wing in their foreheads." Thus is to be understood "the triple concert of the half-winged girls" of Symmachus, lib. i, *Ep.* 47. On the shape of the sirens terminating in an ostrich, see L. Beger on the Iliac table, p. 65, in his book called *Ulysses Sirenes prætervectus, ex delineatione Pighiana*, fol., Berlin, 1703; J. Gronov, *Thes. Ant. Græc.*, t. ii, tab. 7; Ez. Spanheim, *De usu Numism.*, t. i, p. 251, ed. Lond.; J. Brockh ad Tibullum, p. 362; and Cl. Nicasius in *Diss. de Sirenibus*, 4to, Paris, 1691; El. Schedius Jark, p. 629. Herm. Wits,, *Diss. de Sirenibus*, 4to, Traj., 1687; Adv. Junius, *Proverb.*, p. 493; *Les sirenes; ou, discours sur leur forme et figure*, 4to, Paris, 1691. Comp. *Hist. des ouvr. des Sav.*, 1693, Sept., p. 39, 130; J. Jonston, *De avibus fabulosis*, tab. 62, t. i; *Thesaur. animal. Ruysch.*; J. C. Capacci, *Antiq. Neapolit. Thesaur. Italiæ*, tom. ix, c. v, pt. ii; Mich. Frid. Lochner on the hands, ribs, and hair of the sirens, with a mythology of the sirens, and coins, gems, and statues; a work ready for the press, and quite worthy of being printed.

in Pedrusio, t. v, p. 305. Tritons are to be found in Fabretti, p. 304, on Trajan's column. Sphinges in Tristan, p. 389, and in Wild, p. 65, where also is a griffin, pp. 54, 75. And see *Mem. de Trev.*, a. 1704, p. 1938.

CHAPTER III.

On those traditions which are true in themselves, but have been improperly related of men, or ascribed to human monsters.

1. The next thing is to go on from these fables to some things, which, though they cannot be reckoned among fables and stories, still cannot form any objection to the opinion as to the origin of all men from Adam; because they clearly either have nothing to do with men, or else present rather a monstrous aberration of nature, by producing shapes resembling the human body, which cannot be referred to the parentage of men of different origin.

2. Well says Augustine, *De Civit. Dei*, xvi, 8,—"If we were not well aware that apes and monkeys and sphinxes were not men but beasts, those historiographers who boast of their curiosity, might impose them upon us with impunity as certain nations of men." Nor is there any doubt but what this has been done by many, either on purpose, or because they have allowed themselves to be deceived by the stories of others. But however much of the shadow and appearance of reason some of these animals may appear to carry with them, and though they may exhibit on sensual subjects so much sagacity sometimes, that we cannot help regarding them with pleasure and admiration; still they are sufficiently divided from mankind, because they are, so to speak, shut out and excluded from the domain of morals, and are moved and governed by no considerations of law, honesty, virtue, right, or, finally, of religion. And how far these things ought to be considered as of more weight towards dividing them from mankind than what may be deduced from form, stature, and anatomical observations, has been carefully and accurately explained by that superior man Ed. Tyson, an English physician, in his book.* He who cannot obtain this book may profitably

* *Ourang-outang* or *Homo sylvestris*, or, the anatomy of a pygmie compared

consult the *London Journal* for 1699. *The history of the works of the learned*, p. 371. *Philosoph. Trans.*, n. 256, and *Acta Eruditorum*, a. 1700, p. 506. See also Lafitau, t. i, p. 102. Kircher, *China Illustrata*, p. 260. Tulpius, *Observ. Med.*, iii, 56.

3. I would willingly hand over to fable, what we read of in Ælian, and Pliny, and others, about fish with men's faces and things with tritons' heads, and the middle of the body like a man, were it not that some things are related by modern authors which make one believe that some kind of resemblance occurs in some monsters which are sometimes found at sea, but still are as far from having a human nature and constitution as what has been recently told us at Dunkirk.* "The tempest here of March 2 threw on the beach a fish fifteen feet long, which was supposed to have a human face. As I have seen it and handled it, I will give you a description of it. Its head was at least as large as that of a bull; the ears were absolutely flat, and formed like those of a bear, falling in the same way. The eyes were very long, and it had the skin above and below the eyelids of a chestnut colour, like some kinds of eyebrow. The throat was about two feet round; the two rows of teeth both above and below, were as large as those of a man. On its tongue, and from one ear to another, running round below the lower jaw, there was a fringe of hair, which they said was a beard. The most extraordinary thing about this fish was, that on its breast there were two kinds of teats, marked like those of a man, with some hair; and a little higher two hands, which came out about five thumbs length, turning upwards; so that they never could have been of any

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with that of monkey, and ape, and a man: to which is added a philological essay concerning the pygmies, the cynocephali, the satyrs and sphinges of the ancients, wherein it will appear that they are all either apes or monkeys, and not men, as formerly pretended. 4to, 1699: Lond. T. Bennet.

* *Europe savante*, 1718, Apr., p. 288. *Clef du cabinet*, 1716, p. 311. *Giornale di Roma*, 1672, p. 135. *Journal des Sav.*, 1672, p. 102. *Mem. de Trev.*, 1725, Oct., p. 1902. *New Memoirs of Literature*, vol. ii, p. 394. *Cabinet ausländischer merkwurdigkeiten*, p. 144. Bzovius, *Act. Cur.*, 1403, n. 20. Jonston, *De Piscibus*, pl. xl, p. 209. Happel, *Relat. Curios.*, t. ii, p. 11, 81. Theod. Hase, *Sylloge Diss.*, p. 517. Alex. ab Alexandro, iii, 1. Franc. Valentin, priest of Amboina and Banda, in his description of the Old and New East Indies, a splendid work, with many illustrations, in Dutch, 8 vols., fol., Dordr. and Amst., 1726, and much other evidence collected in his third vol., p. 331 and 333.

use to it in swimming, nor in carrying anything to its throat, for they were not attached to arms, but only to a little stump, which seemed immovable. The fingers were perfectly well distinguishable; the nails at the end exactly like the hand of a child of ten years old. This is the most remarkable thing I can find in it, and the only thing which brings it at all like the sea-men painters represent. None of the sailors at Dunkirk have ever seen anything like it. People begin to think that it means something, and find that it is mentioned in the predictions of Nostradamus."

We may compare with this what is said by J. C. Scaliger, *Exercit.*, ccxxvi, on Cardan, s. xii, p. 712. "Besides those things which have been mentioned by Pliny, and more recent writers, I have this; Jerome Dominius, a noble of Noricum, and a very strong man, who was, with his companion in study, John Jucundus the coryphæus of architects, my first instructor in Greek; this Dominius, when, by the orders of his father he had embarked on board ship a band of soldiers, and was bringing reinforcements to the Rhodians, used to tell that he had seen a sea-man at the tail of the anchor. I heard him tell this myself to the Emperor Maximilian. I have seen at Parma in the market-place, amongst the greatest treasures in the shop of a certain artisan, one female nereid about the size of a child two months old. Pliny in his ninth book gives many instances. Tachnis is the largest river of Scythia, and falls into the Arctic Ocean. In it are fish almost human in the face but with no voice. But this resemblance does not in the least protect them from being eaten by the inhabitants. When I once mentioned this at dinner, the company was as much disgusted at these men as if they had been anthropophagi.* I told it to another party, and they all admitted it. I demonstrated that the opinion was impious of those who thought these fish had anything human in them, for some thought there was a chain to be deduced from our soul to theirs in this fashion. One wise man said that Nature had connected mankind through Cannibals, Finns, Peziorians, Pyg-

* Petr. Petitus, *De Anthropophagis*, p. 140.

mies, shrieking Ethiopians, and, lastly, through some sort of apes down to these fishes."

The next story comes from India, and is a little more cheerful. It is a picture of a banquet. The city and kingdom of Cochin are much frequented by sailors. The river Colchan flows by the city, and in it they say fishes are to be found of a human form, which fishes feed upon fish. Their name is cippa. During the day they are concealed in the water, and at night come out on the banks and kindle fire by flints; then the flame attracts the other fishes out of the river, and the cippæ catch and devour them. It is very extraordinary if they cannot catch the fishes more easily under the water, where they all are together. But they must of course have hands. The nereids and tritons, however, have not, but only fins like wings. I wish it was Onesicritus and not Scaliger who was telling these things; but your wit will be well spent in playing over our heavier geniuses."

4. Next come those instances which as monstrosities we may attribute to the exuberance, deficiency, or error of nature, or consider as evidences* of the visitation by God of the wicked lusts of men; but from which we can deduce no argument as to the first beginning whether from Adam or not. For monsters have this peculiarity, which is indeed the very essence of a monster, that they are unlike their very nearest relations, and generally cannot be propagated for a second generation, and are not common to whole nations (though Augustine‡ does not think it absurd to suppose that there are whole nations of monsters as there are individuals), but only are found as individuals, or at all events in small numbers. As to the immediate natural causes by which monsters are formed, I do not

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* Comp. D. J. B. de Wenckh, Physician of Grave *diss. physica* an ex virilis humani seminis cum brutali per nefarium coitum commixtione, aut vicissim, ex bruti maris cum muliebri humano seminis commixtione possit verus homo generari? *Ephem. Nat. Cur.*, cent. ix and x, p. 552. G. F. Seeligmann, *De Dubiis hominibus, in quibus forma humana et brutina mista fertur*, 4to, 1679, Lips. G. Volcm. Hartmann, *Diss. on* G. L. Stahl. Erford, 4to, 1733; and his *Schediasma Apologet., ib.*, 4to, 1734. Bartholin, cent. i, *Hist.*, 86, 11, 80. M. Schurig, *Embryologia*, p. 652, 677, 680-4; and see his *Syllepsilog.*, p. 241, and *Phœdr.*, iii, 3; and Theoph. Paracelsus, *De Natis animalibus ex Sodomia*, t. ix, p. 234.

wish to intrude on the province of the physician, or to rob the portfolios of Caspar a Reyes,* Fortunius Licetus,† and others; or in this place to refer to the question, which has been acutely discussed in the *Mémoires de l'Acad. des Sciences de Paris*, a. 1716, p. 415.

I shall only lightly touch on a few things which, though they show that the human body may present signal mutations, yet they do not authorise us to suppose that such productions are derived from any other source than what is common to all men.

5. Although the ancients attributed horns to Actæon, Alexander the Great, Moses, and many others, contrary to the facts, still Olaf Worms has shown by trustworthy testimony, that men have been gifted by nature with one or more horns, in his book, *De cornu danico Christiani V, glorios. Danæ regis*, p. 15. Jac. Dalechamp says on Pliny, xi, 37, "a horn grew on the forehead of a noble lady, by name De Fortiis Monspessulani, of a finger's length, which was cut off by degrees through the application of a file." Amato of Portugal, *Cent.* 1, *curat.* 51, tells of "a boy born with a little horn on his head, which grew little by little as he grew, and although it was no annoyance to him, he had it cut off in a surgical way, but died soon after, because it turned out to be made up partly of the skull and the medullary substance of the brain." Lycosthenes mentions in his prodigies an infant born with a horn at Rastadt, a town in the Norican Alps. Lanfranc, *Tract.* 3, *Doctr.* 2, c. iii, on the greater surgery, says that he saw a man with seven eminences on his head, of which some were as large and sharp.

What Ingrassius says, *De tumoribus*, tom. i, about a lady of Panormus, who had sharp horns like calves, not only on the head and forehead, but also in all her limbs, and especially in the joints of the hands, the elbow and knee, is borne out by the ocular testimony of J. C. Scaliger, *Exerc.* 199, s. v, who says that he saw "a horn growing out at the back of a certain rower, who was for a long time in a Ligurian vessel." Worms says that he heard an account, quite trustworthy, of a man at Paris in our time, who had one horn, like a ram's horn, on his

* *Campo Elysio*, quest. 45. † *De Monstris*, 4to, Amst., 1667.

forehead, and who took money from those who came to see him. This is no doubt the same person about whom Emanuel Urstis wrote.* So also a girl covered all over with horns is mentioned in *Nouv. de la rep. des lettres,* 1686, p. 790. *Acta Erud.,* 1686, p. 487. *Narratio de vetula cornuta,* Lond., 1679. and J. Morgan, *Phœnix Britann.,* n. iii, p. 249, 4to, 1731, Lond. See also *Nouv. de la rep. des lettres,* 1686, p. 790. *Museum,* T. Crenius, p. 37. Bartholin, *Cent.* v, *hist.* 27, i, 78, ii, 10. Hildan gives (obs. 26) another example from an experiment made by Caproli, a surgeon of Montpellier, on John Guy of that place, who showed him a horn which projected on the left side of his forehead, and asked him to amputate it. It adhered firmly to the skull, was half a foot long, and as thick as a thumb. The horn was cut off at the base, and the flow of blood was so copious that it was necessary to cauterise the wound instantly. But the sore being kept clean, skinned over, and at last the man got well. Besides these and other instances which may be found in Worms, much more of the same kind might be added from Licetus and others who have written about monsters, and also from D. G. Frank, a well-known physician, his medico-philological tract, *De cornutis,* published at Heidelburg in 4to, 1678. But a very much greater number of instances still have been collected by that learned man, T. B. Birkerod, who, in a work on horns and horned people, divided into six books (a sketch of which was published at Hafn in 4to, without date), after discussing in the first two sections of the third book about horned idols at length, gives up the third section, consisting of six whole chapters, to men, to whom either a fabulous belief, or some excess of nature had added horns.

6. There is no part of the human body, no joint, no configuration of the members in which some wonderful alteration, deformity or divergence from the ordinary routine of nature; that either in figure, position, or size, or number may not sometimes take place.† If I were to go into all these points

* W. F. Hildam, *Observ.* 25, *cent.* 2.

† This would have been easy to prove had J. L. Hannemann published his *Thaumatographia curiosa microcosmi physico-medico-theologico-historia,* a sketch of which appeared in *Act. Nat. Cur.,* 1694, *App. ad Dec.* iii, *Ann.* 3, p. 123.

more particularly, there would be no end to it, and any one who is curious on the subject may consult Caspar a Reyes in the fiftieth chapter of questions in his *Campus elysius;* Casper Schotte, *Physica curiosa;* F. Licetus, in his book on monsters, which has often been printed ; H. Kornmann, in his book on the wonders of animate beings, which is not without an admixture of fable ; Marcellus Donato, *Medica historia mirabilis,* especially in the second chapter f the sixth book ; John Johnston, *Thaumatographia naturalis,* in the tenth class and ninth article, on wonderful men ; J. J. Waldschmid, *Diss. de monstrosis partubus,* Marburg, 8vo, 1707, and in other writers on the same subject many instances are given. To them also may be added the effects of the imagination, and what may be caused by frights or by objects unexpectedly presented to the view of pregnant women, and which has often been observed to have an effect in altering and disturbing the shape of the body in the almost mature fœtus in many ways. Instances of this are given by Casparo a Reyes, T. Bartholin,* and T. Fienes in various works, especially in that often printed one, *On the strength of the imagination,* and what is reported by P. J. Sachs in his *Gammatologia,* about a child who was born with crab's feet, because its mother had been suddenly frightened by the sight of a crab.

6. Men have been found in whom, as in hyænas, a solid bone has supplied the place of teeth. Thus, besides Pliny, viii, 21, and Tzetzes *Chiliad.* iii, 950, and T. Bartholin., *Cent.* i, *hist.* 35, Herbelot, *Bibliotheca Orientalis,* p. 110, tells us on the testimony of Arabian writers, that "Abdalsamid, uncle of the two first Caliphs of the house of the Abassides, never lost a single tooth, because both his jaws, as well the upper as the under one, consisted each of a single piece." Others have been known to have double rows of jaws, or as Hercules a triple row ; others have been born not with gums but teeth ready cut.† Naturally man has one spleen, and that

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* *Loc. cit.* and *Hist. anatomic,* 61, v. 24, i. 79.

† Adalbert or Albert Tylkowski, *Disquisitio physica ostenti duorum puerorum, quorum unus cum dente aureo, alter cum capite giganteo Vilnæ, A. C.* 1673, *spectabantur,* 12mo, Gedani, 1674.

of moderate size; but some have had an extremely small one,* or an excessively large one;† and in some, as is mentioned in the Letters of Guido Patin,‡ five have been found.

The heart has been found without ventricles;§ and as in Leonidas, Aristomenes, and Hermogenes,‖ hairy and set with bristles, and has been even entirely wanting.¶ A man has been known without lung, ventricle, or bladder; others** without brain or head,†† fundament,‡‡ bile,§§ genitals;‖‖ others without testicles,¶¶ yet just as capable of the act of generation as those with one or three testicles. Androgyni or hermaphrodites, are common, both according to old and recent accounts, and also persons who have changed their sex; on all of whom C. Bauhin, a physician of Basle, has discoursed most diligently in his book, *De hermaphroditorum monstrosorumque partuum natura*, 8vo, Oppenheim, 1614. Besides him, Jac. Duval, in a book published in French, 8vo, Rothomagi, 1612. Jo. Riolan and Jac. Moller, *De cornutis et hermaphroditis*, 4to, Franckf. 1693. S. R. Castrensis, *De natura muliebri*, pp. 55, 63. Caspar a Reyes, *loc. cit., quæst.* 48. J. F. Mayer, *Diss. de sacerdote androgyno, Museum*, t. ii, p. 46. J. Floridus, *Ad*

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* *Miscell. naturæ curiosar.*, t. i, p. 17.

† *Ibid.*, p. 15.

‡ M. Patin, *Lettres*, t. i, p. 451, "five distinct spleens found in one body."

§ Vigneul Marville, t. i, *Mélanges*, p. 161.

‖ *Journal des savans*, a. 1682, p. 301; Muret, xii, 10; *Var. lect.*, Can a man live without a heart? see *Act. nat. cur.* i, 3, p. 409, 95. Cic., *De divinatione*, ii, 16; on an inverted heart, *ib.*, i, 2; on a heart on the right side, p. 296.

¶ Andr. Carolus, *Memorab. sæc.*, xvii, a. 1676, p. 167. *Act. nat. cur.*, ii, 5; app., pp. 12, 24.

** *Giornale di Roma*, a. 1675, p. 26. *Nouvelle de la rep. des lettres*, 1702, t. ii, p. 97. *Journ. des sav.*, 1673, pp. 65, 87. *Acta med. Berolinensia*, vol. viii, Dec. 1, p. 130. *Mémoires de Trev.*, 1715, p. 439. *Galleria di Minerva*, t. vii, p. 189. *Acta Er.*, 1721, p. 128, a. 1726, p. 498. *Mém. de l'académie des sciences*, a. 1716, pp. 417, 431, 435; a female child without skull, and with a piece of flesh instead of brain. Vallisnieri, *Nuove osservationi ed esperienze*, p. 158, 4to, Padua, 1713. J. Jac. Wepf, *De puella sine cerebro nata*, 8vo, Schaffh., 1665; and see *Act. nat. cur.*, i, 2, pp. 60, 175, 196, 392, 427; ii, 3, p. 305; and Laur. Heister, *Observ. medic. miscell.*, 4to, Helmst., 1730. Bartholin., obs. xiv, *Hist. anat.*, 91, and i, 33.

†† *New memoirs of literature*, t. iv, p. 446. *Journ. des Sav.*, 1726. *Act. nat. cur.*, i, 3, p. 442.

‡‡ *Act. nat. cur.*, ii, 3, p. 225.

§§ J. Rhodius, *Observ.*, 24.

‖‖ *Nova literaria Germaniæ*, a. 1704, p. 48. *Acta nat. cur.*, ii, 5, p. 84. Vallisnieri, *Opere diverse*, t. iii, p. 349.

¶¶ Th. Reines, *Epist. ad Hofmannum*, p. 664.

Ausonii epigramma, pp. 69, 100, 100, 107. There have been others who have had moveable ears,* as Vesalius tells us he saw himself at Padua, a lawyer, Claudius Simonius; a witty man from Forum Julii, and Peter Ravascheri of Genoa, a strong and powerful man. Besides these there was Muretus,† who was said to be able to move his ears at will, like the animals. Instances, too, are mentioned of men who ruminated, and Petrus Petitus‡ declares he was acquainted with a man, whose food half digested used to return into his mouth at a certain time after dinner, and who used to remasticate it and chew it like the cows.§ Very common, too, are strumous persons, and those who see by night; to add no more to the instances collected by Morhof in his learned dissertation on the freaks of the senses, published at Kilon, 1685, or by J. L. Hannemann,|| or Sixtus Aspach.¶

7. In all these things I have been talking about, there is nothing which can render at all doubtful the common origin of all men from Adam; but, as I said in the beginning, they are either monstrosities of degeneration,** as are almost all I have just mentioned, or clearly do not relate to men, as what is said about satyrs, pans, etc., upon which, besides the authors praised above, see the learned and prolix Bauhin; and on the cynocephali, the letter of Bertrami or Ratrami, written in the ninth century, to the priest Rimbert, in which he proves that these must be dissociated from mankind, and considered as animals; and also what is said on anthropomorphous fish by Olaus Wormius, *Mus.*, p. 276.

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* Bayle's Lexicon, art. *Hercule*; and the note of G. V. Marville, *Mélanges*, t. i, p. 353. T. Crennius, *Animadv.*, p. ix, 163. Alexander of Imola, a. 1160, saw a girl who could move her ears at will; on this point see D. G. Franck. Heidelb., 1676.

† Cardan, *De rerum varietate*, viii, 20.

‡ Petrus Petitus, *De Anthropophagis*, p. 73.

§ *Ibid*; see also Bartholin, *Hist. anatom.*, v, 16.

|| *Sciagraphia thaumatographiæ curiosæ microcosmi physico-medico-theologico-historica*, Kil., 1694.

¶ *In miris defectum quorundam in corpore humano supplementis*, 4to, Hafn., 1690.

** *De hermaphroditis*, c. 13.

CHAPTER IV.

On Giants, Pigmies, and Negroes.

1. It has been well observed, that the Creator,* as in all other things, so also in the stature of man, has shown a providential regard for his comfort and convenience. For though he might have made man a much smaller or a much larger animal, yet as man was intended to have dominion over all others, it was thought better that he should be of the moderate size he is, rather than of any other. What if he had been only a foot or nine inches and a half long, how could he have managed the business of life, have kept off the attacks of wild beasts, or brought them under his authority? Had he, on the other hand, equalled or surpassed towers or mountains in size, no country could have afforded him sufficient food, no animals could have been found capable of carrying him. What kind of clothes, carriages, machines, instruments, houses, must we have had to provide proper accommodation for such enormous bodies? Vast though the world is, there would have been room for only a few mortals in it, and they would have wanted almost all the best advantages and conveniences of life.

2. Much has been said, which is quite opposed to the facts, on giants, and the bones of giants. It would not be easy to find any stories more fabulous than those of the poets;† such, for example, as the verses of Homer about Tityus, the child of the all-producing earth, whose body extended over nine acres; or about Polyphemus, the great Cyclops,‡ who reached the stars, being about two hundred feet high, and whose staff, according to Lucilius, was greater than the largest mast in any merchant vessel.§ Nor is it only the poets who speak in this way. In some historians,‖ who wrote of things of far earlier

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* Fénélon, *Demonstrat. de l'existence de Dieu*, c. xlii. Derham, *Physico-theology*, lib. 5, c. iv.

† Virgil, *Æneid*, vi, 595; Homer, *Odyss.*, l. 576.

‡ *Æneid*, iii, 619.

§ Ap. Nonn. on the word *Corbita*, p. 533.

‖ See Joseph., *Antiq.*, i, 4, v. 2; xviii, 6; Diod. Sic., iv, 21; Plin., vii, 16; Strabo, xvii, p. 829; Philostrat., *Heroic.*, p. 669; Augustin, *De civ. Dei*, xv, 9. P. Burmann, *Thesauri Siciliæ*, t. i, p. 17. Tho. Fazelli suffered himself to be de-

date than our traditions, we read that the earth was cultivated by men of enormous stature, in whose presence those who live in this age would seem small and dwarfish; and of the fierce wars and great deeds of the giants, quite worthy of such force and strength. These things are confirmed, too, by the philosophers, who do not seem to have given an unreasoning credit to all stories, but appeal to them as things proved by habit and experience, and easy of demonstration to the eyes; as teeth and bones are to be seen in many places of such magnitude, that those who believe them to be human, cannot doubt the existence of giants. Even the theologians thought so too, deceived by a false interpretation of the passage of Moses in Gen. c. vi, where they translated *nephilim* as *giants*, and the sons of God as angels, following the Septuagint and the book ascribed to Enoch. The authority, however, of this supposititious Enoch is nothing; and Moses himself sufficiently indicates those he means by *nephilim*, that is, the impious ones, who were particularly powerful and celebrated in that day, though not of enormous stature: Genes. vi, 4, "These were the giants of old, men of renown." About these, consult the long and learned remarks of J. B. Carpzov, in his singular *Dissertation on Giants*, Lips., 1660. As to the great bones and teeth, such as are engraved by Lambec* and Nessel, and are sometimes dug out of the earth, they are found not to be human, but those of mammoths and elephants; on which

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ceived by Annius of Viterbo, in whose pseudo-Berosus, and other writers of that stamp, the beginnings of Sicily are, with the mob of authors, derived from the sons of Noah: *Decad.*, i, lib. i, c. 6; and *Decad.*, ii, lib. i, c. 1. Hence he makes violent efforts to show that the island was formerly inhabited by giants; and endeavours to make his readers believe in these prodigies by fabulous stories long since exploded, and by bones which have been dug up, and often shown to be those of beasts. In this way he imposed upon Conring, who was certainly a great and very learned man, and who, on his authority, endeavours to confirm his opinion about the giants who formerly inhabited Germany, in his book on the most ancient condition of Helmstadt. But I have no time to follow out this argument here. I may observe this, that most historians of their own country relate that giants were the founders and first men of their nation. See Chifflet, *Vesontio*, p. i, c. 47; and especially the *Commenta* of Tilladettus, which the Fellows of the Royal Academy of inscriptions and polite learning published in their *Commentaries*, i, 1, p. 154, and which created a laugh. On these primæval giants, Keysler is much more sensible, *Antiq. septentr.*, sect. ii, c. 6.

* *Bibl. Vindob.*, t. viii, p. 652.

point it is worth while to consult P. Gassendi,* Teutzel,† Scaramucci,‡ Neocorus,§ the last description of Siberia written in German, and J. B. Muller.‖¶

3. It must not however be denied, that there have been men, and may even now be found men, who exceed the ordinary stature of mankind, and that is over six or even seven feet. Such in the scripture was Og King of Bashan,** who was six cubits, or ten feet and a half high, and Goliath, whose stature was six cubits and a palm,†† not to pile up other examples, celebrated in the records of all histories, and confirmed by the experience of our own age. Some famous instances out of the old writers were selected by that learned man Theod. Ryck in his *Oratio de gigantibus,* which he appended to the notes of Holsten on Stephanus, p. 432. Some other things, too, bearing on this question, will be found in the learned and sweet commentary of the Rev. Paul Christian Hirsch on the lives of Goliath and Og, which he published in 4to. at Buda in 1716, with a commentary on the suppositititious clist Psalm, and a letter on gigantic teeth. That, however, is more worthy of investigation, which Ryck adds about whole nations who far surpassed other men in their superhuman stature.‡‡ But let

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* *Vita Peireskii,* 1613.

† *Epistola ad Magliabechium de sceleto elephantino Tonnæ effosso,* 8vo, Jena, 1696; and *Dialogæ vernaculæ menstruæ,* p. 297, and a. 1697, p. 18.

‡ *Meditationes familiares.*

§ *Bibl. novorum librorum,* a. 1697, p. 364.

‖ *De vita et moribus Ostiackorum, polo Arctico vicinorum,* p. 9.

¶ Sueton., *Augusto,* c. 72, "Enormous members of wild beasts, said to be those of giants." See Hans Sloane *Of fossil teeth and bones of elephants, Philos. Trans.,* n. 403 and 404, pp. 457, 497; *Abridg.,* vol. vi, pt. 3, p. 19. H. Jones, *Abridgment,* vol. iv, pt. 2, pp. 222, 236, 245. Benj. Motte, t. ii, pt. 2, pp. 27, 103, 111, 349, 369. *Mém. de l'acad. de Paris,* 1727, p. 429. *Hist.,* p. 1. *Petersburgsche anmerckungen,* a. 1730, p. 317. *Von den Mamouts knochen die in Siberien gegraben.* P. J. von Strahlenberg, *Nord-und-ostlich theil von Europa und Asia,* p. 393. *Verandertes Russland,* pp. 77, 179. Christian Martin, *Nachricht von Russland,* p. 171. Olaus Wormius, p. 343. *Mus.* T. Bartholin, *Cent.,* i. *Hist. anatom.,* 98. Ath. Kircher, *Mundus subterr.,* t. ii, p. 53. Mich. Mercato, p. 325. *Metallothecæ Hier. Magius,* lib. i, miscel. c. 2. *Gigantologie, ou histoire de la grandeur des géants, où il est démontré que de tout ancienneté les plus grands homes et géants n'ont été plus hauts que ceux de ce temps,* 8vo, Paris, 1618; and comp. *Antigigantologie.*

** Deuteron. iii, 2; see Maim., ii, 47, *Doctor dubitantium.*

†† 1 Sam. xvii, 4.

‡‡ In June 1733, I saw living at Hamburg Daniel Cajanus, a Swede, of that town, nine feet and three fingers in length, who, when I questioned him, told me that neither his parents nor his brothers were above the common

us hear Ryck himself.* "I pass on to whole nations. As to the Bashanites, the thing is clear and undoubted on the authority of holy scripture; besides, Josephus testifies that their bones remained down to his own time. I do not call in the evidence of Onesicritus,† who declares that in some parts of India, where there is no shadow, the stature of man was formerly five cubits and two palms; nor Crates of Pergamos, who says that the Ethiopians of Syrbo grew to twelve feet.‡ Happily the experience of our times refutes stories of this kind, for it is known, that in that part which is to the south of the equator, the stature of man follows the same rule that it does in the north; namely, that the farther you go from the middle, as far as Lapland and regions of the same latitude, the taller you find the men to be. This is because the natural heat, whence it is believed the size of the body depends, is greater in those who live in a cold than in those who live in a hot climate.§ Hence, the Germans, now as of old, the more towards the north they live, the taller they become. And in

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stature. A Jew, of seven cubits, Eleazar by name, was sent as a present to Tiberius by Artabanus, king of the Parthians, Joseph., xviii, 4, p. 882. In 1682, there was a man shown at Dublin seven feet seven inches high, *Philosoph. Trans.*, n. 261, p. 501. For others of eight, nine, ten, and eleven feet, see Lowthorp's *Abridgment*, vol. iii, p. 6. A corpse of nine feet long was found, with others, at Repton in Derbyshire, *Phil. Trans.*, n. 400, p. 363. A very large forehead and part of a skull (forty-four inches round), Lowthorp's *Abridg.*, vol. iii, p. 3. Tho. Molineux, *Phil. Trans.*, n. 168, p. 880; n. 261, p. 487. As to the head of a man which Bzovius (*Acta cur.*, 1485, n. 24) tells us was found in Crete, it rests on the testimony of Sabellicus, *Ennead.* Nor should I like to express an opinion upon the corpse found at Thessalonica, twenty feet long, according to Dumont, *Itiner.*, t. iv, p. 149. It is, however, tolerably well proved that nature has not degenerated, and that men are not born now smaller than of old. See *Acta Lips. Acad.*, i, p. 14. Many instances are collected by W. Whiston, *Collection of authentic records*, p. 872.

* On the inhabitants of the Marianne Islands, see Gemellus Careri, *Iter per orbem terrarum*, t. v, p. 298: "The people of these islands are all of gigantic stature, great corpulence, and of enormous strength, and can carry a weight of five hundred pounds on their shoulders as if it was nothing." See also Frez., *Rélation du voyage de la mer du Sud*, p. 148, and *Mém de Trev.*, a. 1717, p. 283. However this may be, trees which grow beyond the usual height are not, therefore, of a different species. There are horses and dogs, too, which are both much greater and much smaller than what is usual, but still of the same kind. And so, I think, we should judge of men.

† *Antiq.*, 1, v, c. ii.

‡ Pliny, 1, vii, c. ii. According to Strabo, 1, xv, p. 698, this Onesicritus was by far the most untrustworthy of all Alexander's historians. Arrian, 1, vi, p. 124, says, "that he was the naval commander-in-chief of Alexander, and that on account of his mendacity was called Nearchus."

§ Pliny, *loc. cit.*, and Solinus, c. xxxiii.

this our country, in the last century, a certain Nicholas Kethen of Spernewoude was looked at with admiration, being eight Rhenish feet six inches high.* I myself have seen a fisherman of Leckerk, who, although he was a whole foot shorter, attracted great crowds wherever he went. And so far from this procerity of body being confined to Germany, Hector Boethius and the writers on Scotch matters speak of a certain John, who was called by the rule of contrary the Small, but who was fourteen feet high, and lies buried on an island at the extremity of Scotland. Bessus, too, in Curtius, declares that none of the Scythians who dwell beyond the Tanais, are so short but what their shoulders reach the heads of the Macedonian soldier. Finally, Poland recently sent a certain Martin Wierwsk eight whole feet high to Maximilian the Second.

"In like manner beyond the equator towards the south in the last century, Patagonians, who are in the corresponding latitude to the Germans, not only astonished those who found them by being of the same height as the Germans, but by equalling, or even exceeding Og. And that you may not think I am merely repeating fables, let me bring evidence to the fact from the journals of several navigators. As these points depend upon the affirmation of every single voyager, it would seem they may demand the same credit as official documents.

"The first of these was Ferdinand Magellan, whose date falls in 1519, and after whom this region towards the south of the new world and the Straits have received their name. Antonius Pigafetta, the writer of Magellan's diary, says that when they were wintering in the port of St. Julian, which he places in 99 deg. 30 min. S., they saw no men anywhere; but all of a sudden one day, as if he had fallen from the sky, a man of

* According to the measure, giving the extreme distance, to which his arms could extend, which is marked on the walls of the church at Spernerwoude, on two sides, I found myself it to be eight Rhineland feet and a half, last summer, when I was paying a visit to my friends at Haarlem, from which Spernerwoude, a rapidly decaying village, is about an hour's walk distant, and if the stature of the man was as great as the extension of his arms, this Nichola must have been eight Rhineland feet six inches high. He is spoken of by Hadrian jun., Batav, p. 30.

gigantic stature approached the harbour, dancing and singing, and throwing dust on his head as a sign of peace. Soon, when by orders of the commander the Spaniards did the same, the giant came nearer, evidently very much astonished and stupified, as they gathered from the way he kept throwing up his fingers, and other signs. This man stood so high, that the Spaniards could not reach his middle; his face was immense, painted and stained of a yellow colour round the circuit of it and round the eyes; on each cheek was drawn the figure of a heart; his hair was whitish, he was clothed with skins and armed with a bow. After he had been hospitably received and dismissed by the Spaniards, more men of that nation came and showed themselves, of equal stature.* He took away two of them with him, but they died on the voyage, when they got into warmer latitudes. The name of Patagonies was given to these people of Magellan. Magellan was descended from a noble family of Portugal, and served for a long time under Albuquerque in the East Indies. On his return home he was neglected by King Emanuel, and went off to Charles V, whom he told that the Molucca Islands belonged to the possessions of Castile, according to the division of Pope Alexander VI. Having obtained from the Emperor five ships, he set out to seize them by this hitherto unknown route; but in the very act of attempting to occupy one by force, he was killed. Five years afterwards this route was again explored by the Spaniards under Herrera, who says that he saw the same giants there. Afterwards the English under the famous Francis Drake went there, and again under Thomas Candisi; and finally our own countrymen under different captains. Sebald Weert, who sailed from Rotterdam with five ships towards the end of the last century, says, that in Green Bay, as he calls a place adapted for ships in the Straits of Magellan, distant one-and-twenty leagues from its eastern entrance, he not only saw seven boats full of men ten or eleven feet high, but was obliged to fight for his life with them. Our people were victorious through their weapons, and the giants fled to the land; and there by

* *Voyage de Frezier*, p. 148, 12mo, Amst., 1712.

the sole force of their arms they pulled up a great many trees, which seemed to be in the distance nearly a foot thick, with which they made a palisade against the shots our people fired at them from above. Oliver Nort, who in the same year, but a few months later than Sebald, made the same voyage from the Texel, says that he was informed by a captive savage of that country, who learnt our language, that the giants whom Magellan called Patagonians, were called Tirimenes by the natives, and were the biggest of all the barbarians, and reached the height of ten and eleven feet. Jac. Maier, who discovered a new inlet into the Pacific Ocean, to the south of the Straits of Magellan, which is called after him, and who also sailed from Texel in the fifteenth year of this century, says, that when anchored in the harbour of Desire, which according to his observations was situated in 47 deg. 50 min. S., he used to send out daily, partly to get drinking water, and partly to examine the inhabitants of the country. There heaps of stones were found on the tops of the mountains, the meaning of which they could not understand; but as men do, when they investigate the unknown, they threw the stones about in all directions, and there were found under them corpses ten or eleven feet long, flesh still adhering to the bare bones.

"He does not tell us whether any of these bones were taken away, but it is very likely indeed some were. And perhaps it is in this way that we have become possessed of that frontal bone of such prodigious magnitude which is still preserved in the medical theatre of this town.* Its circumference is twenty-six inches, when in the largest skulls of this country it is only sixteen. The space from between the eyebrows to the parietal bone is nine thumbs, whereas in ordinary persons it is only five. So, if the law of proportion holds good, the man to whose head that bone formerly belonged, must have been a little over ten feet high. As to the thighbone, which is two Rhenish feet long, and is to be seen in the anatomical theatre, we need not attribute it to a foreigner; the owner must have been eight feet or a little more to whom it belonged, and I have shown that such men are to be found in this country.

* Leyden.

"The report of the gigantic stature of these men of Magellan, which has long since reached this world, shows that we ought not to consider as fables the stories which some of the ancients have reported about the island in the Atlantic, which was once discovered by the Carthaginians, and kept very cautiously to themselves. At all events, Ælian says, that according to Theopompus, Silenus told King Midas that beyond this world there was another continent, which was inhabited by men twice our size."*

4. I have quoted these accounts, though at considerable length, because I wished to bring under one view the most probable accounts of this sort which have been published, and at the same time to remark that there is nothing in all of them to show that these men who are so tall are of a different origin from other men. At the same time it cannot be denied that much is exaggerated by writers to cause fear, as was done by the spies sent out by the Israelites, who said, Num. xiii, 32, —"We be not able to go up against the people—the land through which we have gone to search it, is a land which eateth up the inhabitants thereof; and all the people that we saw in it were men of great stature, and there we saw the giants, the sons of Anak, which come of the giants, and we were in our own sight as grasshoppers, and so we were in their sight." Or because they want to tell wonders or to boast to their readers, just as Saxo and other writers on northern antiquities have not hesitated to attribute immense bodies† and vast limbs to the old inhabitants of those coun-

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* *V. H.*, l. 3, c. xviii.

† Comp. Rudbeck, *Atlantica*, t. iii, p. 347. Harald Valler, *Diss. de varia hominum forma externa*, p. 10, 4to, Upsal, 1705. Consing, *De habitus corporum Germ. causis*, p. 9, with the notes of J. P. Burggrav, p. 61. Thormod Torf, *De gigantibus septentrionalibus*, t. i, p. 113, Norway. Justin, xi, 13, says, "the Persians have large bodies." Almost all the Gauls are said to be of large stature by Ammianus, xv, 12. J. G. Keysler, *Antiq. Septen.*, p. 209, *De gigantibus Britanniæ incolis.* And generally upon giants, comp. Arthur Bedford, *app.*, on the stature of the antediluvians at the end of his work, *The Scripture chronology demonstrated*, fol. Lond., 1730. Aug. Calmet, *Diss. sur les géants*, t. i, p. 22, and *Comm. in Genes.*, *Mém. de Trèves*, 1723, p. 20. Jo. Cassanius, *Lib. de gigantibus*, *Galeria di Minerva*, t. vi, p. 68. Tho. Molineux, *Diss. sur les géans*, *Mém de Trèv.*, ii, p. 324, 1701. Mahudel, *Diss. sur la taille des géans*, *Mém. de Trèv.*, p. 1844, 1724. *Gigantologie*, etc., 8vo, Paris, 1618. *Antigigantologie ou contrediscours de la grandeur des géans, par* Nic. Hadicot,

tries, chiming in with the obsolete stories of the poets, according to whom, instead of those original races,

"Earth now produces small and wicked men".

They also liked to give out as the stature of giants, and attribute to whole nations observations made on one or two, some things which a little exceeded the ordinary and moderate size of bodies; all of which depend upon diet and mode of life and not upon ancestors of different origin; and so are very different at different times in the same nation; just as Cæsar attributes to our German ancestors vast bodily size in two passages, which does not, however, prove that they were not descended from Adam; as Columella remarks, iii, 8,—"Nature has not altogether denied to other nations men of enormous stature, for M. T. Cicero is a witness that there was a Roman citizen, Nævius Pollio, a foot taller than the tallest man; and I myself might have seen recently among the preparations for the procession of the games of the circus, a Jew taller than the tallest German." The reason why men of this stature are not seen so often amongst the Germans of the present day, as they were by Mela, Tacitus, Juvenal, and others besides Cæsar, have been diligently examined in a singular book, the third edition of which was printed at Helmstadt in 1666 by Hermann Conring, a man, who though very small in stature, was very conspicuous for genius, learning, and literary merit. He considers the most efficient causes of the diminution, the smaller stature, and the tendency of our bodies, to be our mode of life and bringing up altogether opposed to and much more delicate than the old way, to the excessive love of warmth, and the dislike to exercise, and to precocious venery and the seductions of wine. The ancient Germans were used to cold and fatigue from infancy; as to the rest they led a life of few cares, they strengthened their bodies by exercise, they lived on preparations of milk, and they were abstemious in

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Paris, 8vo, 1618; and *Giornale di Roma*, p. 79, 1676. H. Gautier, *Bibl. des Philosoph.*, t. i, p. 587. Tilladet, *Hist. de l'Acad. des belles lettres*, t. i, p. 152. Dan. Guil. Moller, *Diss. de Gigantibus*, 4to, Altorf, 1698. Paul. Frid. Opitii *Iter*, Kil., 1715. Happel, *Relat.*, t. ii, p. 93.

* Lib. i, *De bello Gallico*, c. xxxix.

venery and wine. It may also be that the stature of the ancient Germans appeared greater and more terrible to the Romans than it really was, from their habit of wearing the skins and spoils of wild beasts, and the tusks of animals, with which they adorned their heads.

5. The question of giants is quite another thing from that of pygmies,* about whom, although I admit that most of the things generally related are fabulous, still it is not the less certain not only that there are men of low stature, such as they say most of the Laplanders are, and such as are to be found everywhere in the midst of all nations; but that even real dwarfs and little men exist, not greater in length than two or three feet. Such, however, are very rare, and are made so small by some material or natural defect of formation, and afford no proof of their being originally of a different stock from that of Adam, but only prove that there was some defect in their immediate parents, just as delicate children tell of the wants of their fathers. Nothing in this way has occurred during our time more famous than the solemn nuptials which the great Russian Emperor commanded to be solemnised between two pygmies at St. Petersburgh, Nov. 11, 1710,† on which occasion he caused two hundred and seventy dwarfs and little people of both sexes to be present, who had been sought for everywhere, and some of them brought a distance of two hundred miles. As to the battle of the pygmies and the cranes and partridges which we read of in Homer and many later

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* A pygmy was the image of Vulcan, see Herod., iii, 37. The Cabiri, sons of Vulcan, were pygmies, "men smaller than ordinary men in Africa, black skinned," Herodot., ii, 32. Notice of a Syrian of five cubits, and an Egyptian who was no bigger than a partridge, but of sound speech and judgment, and who lived over sixty years, in *Philostorg.*, x, 11. L. Itius, the dwarf of Augustus, in *Sueton.*, c. xliii; comp. J. Ludolph, *Comment. ad Hist. Æthiop.*, p. 69. Kircher, *Prodr. copt.*, p. 94. J. L. Mosheim, *Diss. de pygmæis Æthiopiæ populis*, Kil., 1721; reprinted 1727, with a *Diss. de statura corporum beatorum*, against Bern. Connor. Steph. Clerc, *Quæst.* vii, p. 350. Aldrov., *Monstr. hist.* Buxt., *Lexico Talm.*, p. 1351, v, *Dwarf.* Fuller, *Misc.*, vi, 3. Abbé Banier, *Diss. sur les pygmées, Mém. Ac. Inscr. Regiæ Paris*, t. v. Sir T. Brown, *Popular fallacies*, lib. 4, c. xi, p. 748. I say nothing of the Cobalts, those little men of the mines, about whom see Kircher, *Prodr. copt.*, p. 95. Casp. Posner, *Diss.*, Jen., 4to, 1662, and J. H. Rumpel, Lips., 1672.

† *Die denckwurdige zwerg-hochzeit beschrieben* in H. C., exact account from Petersburg, p. 102, 8vo, Lips., 1713.

writers, as Athenæus, ix, 390,* some consider them as mere fables,† others look upon it as an hyperbolical description of the Lapps hunting the birds, and getting the eggs they deposit in mountain caverns. Lastly, others interpret it as an allegorical description of the battle between the people of Megara and the Geranei and Tripodisci as the learned and ingenious Hermann de Hardt, in his *Mythology of the Greeks Unveiled*,‡ in which book also he argues against the work of Caspar Bartholin,§ and says that the Gammadim of the prophet Ezekiel are not pygmies a cubit high, but Canaanite inhabitants of Megiddo near Doris, at Mount Carmel; by whom, also, Authing thinks we are to understand the Gammadim of Phœnicia in Ezekiel.

6. This, however, results from investigation, that there are no such things as whole nations of pygmies, as some have feigned,‖ although according to the variations of climate some men are in one place of shorter stature than others.¶ But inasmuch as no sane person will say that dwarfs may not be born from the same ancestors as men of middle or even of large stature, so we must not suppose when little men come before our notice, that they are necessarily sprung from a different protoplast. Every day we see children born differing from their parents in form, manners, and stature, and as very tall men come from some excess, so dwarfs come from some defect of material, or interruption of natural forces.**

7. It seems more difficult to explain how, if Adam was black

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* Strabo and Cardan, *De varietate rerum*, viii, 40. G. A. Anthring, *Diss. erudita de fabulosa pygmœorum gente*, 4to, Wittenb., 1710.

† Olaf Rudbeck, *Atlantica*, t. 3, c. x, p. 139. J. Esberg, *Diss. de pygmœis*, 8vo, Upsal, 1703. Harald Valler, *Diss. de varia hom. forma externa*, 4to, Upsal, 1715.

‡ 8vo, Goslar., 1716.

§ *De pygmœis*, 8vo, Hafn., 1628.

‖ Ant. Paulini denies the existence of these nations, in *Curieuse cabinet auslandischer merckwurdigkeiten*, p. 487.

¶ *Le spectacle de la nat.*, t. i, p. 528: "The children of a huge Prussian, if transported into Lapland, will not fail, after some generations, to feel by little and little the dominant influence, and to suffer from the continuous action of the climate, without changing at first, and will become Lapps.

** It is said, that if a certain sort of grease is smeared on the dorsal spine of the young of the squirrel, the bat, or the mole, or spirits of wine on puppies, they become dwarfed. See J. P. Burggrav, notes to Couring, *De causis hab. corp. Germ.*, p. 266.

or white, black men could have come from white, or white men from black.* Hence it has happened, as I said above, that there have been those who consider that at least two men were made by God in the beginning, that is, black and white. That the Ethiopians, however, have their progeny black, as related by Herodotus, has long since been refuted by Aristotle; and that the first man was created black by God is neither agreeable to the account of Moses nor the site of Paradise,† nor perhaps to the nature of the human body, which becomes black in many ways, but from being perfectly black cannot become white, unless little by little by intercourse and procreation with whites. It will be enough for my purpose to show how blacks could have come from our first parents, whom I believe to have been created white, since Moses derives the Jews from them, and they certainly were not black. First of all, we must distinguish two kinds of blackness in men.‡ One has all sorts of shades, and generally shows a brown colour, or a dirty yellow, or tawny. The other is a more perfect sort of blackness, and is joined with a glossiness which emulates the brightness of silver, as is seen in the Ethiopians, who are considered the more handsome the blacker they are,

* On the causes of the blackness of the Ethiopians, see *Diarium Belgicum*, July and August, p. 104. Bocksaal, 1706. J. J. Waldschmid, *Diss. de colore Æthiopum*, 8vo, Marp., 1707. J. V. Merbitz, *De varietate faciei humanæ*, 4to, Dresd., 1676. J. Vesling, Knt. of Minden, *Diss. de pullitie Ægyptior.*, and T. Bartholin, *De insolitis partus viis*, 8vo, Hafn., 1664. But the point is left only just glanced at by the author, see J. Rhodius, *Epist. ad Nic. Heinsium Sylloge Burmanniana*, p. 451. And on the colour of the Ethiopians, Labat, *Afrique*, t. ii, p. 254, who also, p. 257, declares against those who ascribe the origin of blackness to the curse of Cain, and denies that the deluge was universal, and that Cain's posterity escaped from it, although those who first discovered America found there a tradition of it. And that the posterity of Canaan were blacks in Palestine, see J. C. Schwartz, *Commentatio de unica humani generis stirpe Adamo Miscell. Theol.*, p. 309. H. Gautier, *Bibl. des Philosophes*, t. i, p. 597. Ed. Guiot deduces the varieties of man from the different form of Adam and Eve and the three sons of Noah, *Nouveau système du microcosme, Hist. lit. de l'Europe*, p. 45, May 1727.

† On black seed and milk, Maussacus, iii, 10, p. 1242. *Hist. anim.*, iii, 22; and *De gen. an.*, lib. ii, c. 2.

‡ Those born from a white and black, whether male or female, are called Mestis or Mulattoes; from a mulatto and a black, Griffs; from two mulattoes, Casquas: see *Hist. de l'Acad. des Sciences*, p. 24, 1724, on the change of colour in mulattoes who spring from the blacks and whites. See Labat, *Voyage aux îles Françoise d'Amérique*, t. ii, p. 170. Mamelucs are those born of European whites and savage American women, or savage men and white women. Creoles, those born in America from European parents. *Travels of* Rob. Boyle, v, 2, p. 92.

since, in their opinion, a black colour is held in the same esteem and pleasure as white with us.*

8. When, however, we examine the thing more accurately, neither of these kinds of blackness stands in the way of their both coming from one and the same protoplast; nor do the blacks acknowledge any other parent but Noah, or if we go beyond the deluge, Adam. There is little doubt about the first sort; and we may easily agree with Theodoret, who attributes the diversity of colour in the skin to the solar rays striking the air in a different way in different climates. Pliny says, vi, 19, "From the southern bank of the Ganges, the inhabitants are tinged by the sun, and stained, but not burnt up like the Ethiopians, and as they approach the Indus, their colour shows the effect of the luminary;"† that is, they become blacker. Solinus, c. lii, "Those who live near the Indus, on the south side of it, are burnt by the heat more than others; and the colour of the men shows the power of the sun."‡ Lucan, x, 221, "The colour of the people, scorched by the sun, is a proof."§

So also it has been noticed by Hyde, in his notes to the travels of Peritsol (p. 48), that those who keep in-doors are less black, because they are less exposed to the sun. And people may become black, not only from the heat of the sun, but also burning cold will make the skin brown and tawny, as experience shows, and has already been observed by Hippocrates.‖ I cannot, however, deduce that more perfect, deep,

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* In the island of Gorea, white is the colour of the devils, and the inhabitants consider it as one of the prerogatives of their nation to be the blackest people of Africa. It is certain that colour is by no means disagreeable when it is a very deep and shining ebony, as practically it is in almost all: *Lettres édifiantes*, t. iii, p. 49. Xenophanes, in Theodoret, *Therapeut.*, iii, p. 49, laughs at men who, in one place, dedicate and pray to black idols, in another to white, in another to blue or red.

† *De providentia*, lib. vii. *Opera*, t. vii, p. 397. Hyginus, *Fab.* 154. "The Indians, whose colour is like that of fire, when their blood is turned into black, become black." Herod., ii, 22: "Men made black by the heat." See Origen, *De principiis*, iv, 2. *Quæst. ad Antiochum*, qu. 123. Athanas., t. iii, 297. Georg. of Pisidia, *Cosmurgice*, v, 292. Prudentius, *Amartigenia*, p. 499, and Weitz, note, p. 669. See also Brockh on *Prop.* iv, 3, 10, p. 396, 2nd ed. "Ustus et Eoo decolor Indus equo."

‡ *De ære locis et aquis*, t. 1, c. xlviii; t. 1, p. 356.

§ *Loc. cit.*, s. 94, and *Voyage to Sumatra*, c. xiii.

‖ *Loc. cit.*

and full blackness, like that of the Ethiopians, as the mark of the posterity of Ham, from the curse of Ham: nor can I ascribe it entirely to the solar rays. This last opinion have been refuted with indisputable arguments by Conring and J. Ovington, and by the learned J. N. Pechlin; and also by Sir T. Browne, who numbers it among vulgar errors.* These two things, I consider, have been discovered, and result from the investigation,†—that aliment, water, and the air we inhale, have just as powerful an influence as the rays of the sun, or the scorching of cold, in altering the body and inducing a black colour, and as Browne sagaciously observes, the power of vegetable vitriol. And on black urine, see *Acta nat. cur.*, decad. ii, an. 2, p. 132.

Secondly. It may be the case that, in long successions of generations, nature may degenerate from the very purest white to the deepest black, until at last this becomes so confirmed in the body that it remains, and is propagated with the blood itself and is an efficient cause of carrying on the blackness to posterity. Hence, it seems less remarkable that the majority of the Jews who live on the Malabar coast have become as black as the Ethiopians; and only a Jew whose ancestors, perhaps, arrived there later, have retained that whiteness the progenitors of their race had in the outset, or something approaching to whiteness. This we learn from Phil. Baldæus, and from the author of a letter sent a few years ago from India to Belgium, the gist of which has been repeated at length by Ludolph Kuster.

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* *Pseudodoxia epidemica*, c. x. and and xi, book 6.

† Lister, *Phil. Trans.*, n. 117, p. 400, notices that the blood of the people of Barbados is black. A black infant born from a white mother, and black grand-parents, in Labat, *Afrique*, t. v, p. 140. A white woman of black parents, married to a black, had black children, t. ii, p. 268. A healthy Ethiopian covered with large white spots: Will. Byrd, *Phil. Trans.*, n. 235, p. 781. Lowthorp's *Abridgment*, t. iii, p. 8. The offspring of an Ethiopian with a white woman, black genitals, and the rest of the body white. Bartholin, *Hist. anat.*, iv, 5. See Christ. Pyle, *Diss. de Æthiopibus albis*; *Miscell. Lips.*, t. v, p. 116. A black fœtus from a mother blackened with powder. *Acta nat. cur.*, ii, 6, p. 39, and Schurig, *Embryologia*, p. 198. People becoming black in the face from a suppression of blood, *Philos. Trans.*, n. 323. Benj. Motte, *Abridgment*, t. i, P. ii, p. 16. Pechlin and Riolan place the cause of blackness in the epidermis, not in the skin. The anatomists of Paris place it in the reticulum, between the skin and the epidermis. Labat, *Afrique*, t. ii, p. 265.

I need not go to great length to prove the great and wonderful power of climate, or the efficaciousness of aliment on plants and animals, in generating among them different forms and dispositions, for this is proved to be certain and constant by the testimony of all investigators of nature, and by innumerable experiments.* There is no one who is not aware that the same plants, when cultivated in another climate, become very different; that animals brought up in strange countries, on fresh pasture, put on quite a different appearance, and present quite a different form; and that the same sort of insects fed upon different plants, under the same sky, put on a different form and nature. Besides a different climate, or as Columella calls it, a different inclination of the world and a different sky, often induces no small diversity of the mind itself through its union with the body. And it is very true that great geniuses are seldom born under a heavy atmosphere, or in the country of vetches: so Vitruvius (lib. vi, c. i) says; "on account of the thinness of the air, the southern nations, from their burning heat, are more rapid in mind and more easily moved to take up opinions; the northern nations are infected with the dulness of their climate, and on account of the resistance of the air, have minds blunted and chilled by the fogs." What, then, is there in all this, even in that diversity of colour which is seen in men, or that discrepancy which is found in the form and style of bodies, to argue as a necessary consequence a diversity of origin, besides that from Adam?

CHAPTER V.

On those things which depend upon human customs and institutions.

1. I must now add a few words upon that diversity of form

* On plants, Ray, t. i, pp. 42, 50. Anton. le Grand, *Instit. Philos.*, P. vii, c. ii. From the neglect of agriculturists, or the fault of the soil, plants degenerate, and become changed into others, as wheat into twitch, basil into thyme, watercress into watermint, barley into oats. See J. B. Triumfetti, *Observ. de ortu et veget. plantar.*, p. 60, and Du Hamel, *Mém. de l'Acad. de Paris*, 1728, on the causes of the multiplication or variation of the species of fruits, *Hist.*, p. 63. In this way, I think, an answer may be made to the objections of Baron de la Hotan, *Iter. Epist.* 24. See *History of the works of the learned*, p. 75, 1703.

in the appearance of men, and the constitution of their bodies, which is caused not by nature, but by human customs and institutions; and which, therefore, give still less countenance than the other differences for referring the origin of man to different protoplasts, and not to Adam, as the ultimate and sole origin of mankind.

2. The accounts of Picts who painted their faces,* is common in old authorities; such as the Arians of Tacitus, whose bodies were stained, or the inhabitants of Thule and Caledonia, a province of Britain. See, also, Simondi† and Cellarius.‡ Some have thought that the Pictones and Pictavi of Gaul were so called from their pigments.§ I might bring more instances of this kind, if wanted, to describe what has been done so learnedly and so agreeably by Olaus Rudbeck, jun.,‖ and D. P. Lehmann.¶ Who is ignorant of the dingy pallor of the gipsies? for those are clearly wrong who suppose that appearance to be natural. When they were first seen in Germany in 1417, according to Seb. Munster, some thought they came from Circassian Tartars, others from Bohemian Hussites; Wagenseil,** with greater probability, referred them, unless am mistaken, to the Jews. Still, no one will deny that they

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* Amongst these are the Agathyrsi of Mela, ii, 12, and Pliny, iv, 12; the Assyrians in Lucian, *De Dea Syria*. The women of Thrace in Herod., v, 6. The Mossyni in Mela, i, 19, and Pliny, vi, 4. The Hypporæ in Pliny, vi, 30. The Scythians in Ammian., xxxi, 2. On the plant *vitrum*, with which the Britons stained their whole body, see Salmas. ad Solin., p. 254 and p. 258. He shows that boys were stamped with the forms of animals. More instances are given also, *ib.*, p. 188. In our day the Americans are painted with figures. *Act. Acad. Lips.*, i, p. 86. Lafiteau, t. ii, p. 38. *Diss. sur les peuples d'Amérique*, c. vii. *America*, t. iii, pp. 169, 113, 114; t. ii, p. 13, t. i, pl. xxiii. The Africans do the same. Dapper's *Africa*, pp. 31, 169, 86. On the Tunguses, Ad. Brandt, *Reisen*, p 95. The Tartar women stain their nails red colour with the herb *kna*, according to Strahlenberg, *Nordostl. Theil von Europa und Asia*, p. 359. The Caribs stain themselves red every day, so that they may have the colour of a boiled crab, *Journ. lit.*, t. xii, P. 11, p. 248, and that not merely for the sake of ornament, but to give them a better protection against the heat of the sun and the bites of insects.

† Sidonii *Carmen*, vii. t. i. Opp. 1199.

‡ *Geographia antiqua*, t. i, p. 438.

§ Solinus, c. v; Isidorus, xix, 23.

‖ *De borith fullonum*, p. 53.

¶ *Diss. de orbe picto, seu de gentibus pulchritudinem affectantibus per fucum et picturam*, 4to, Wittburg, 1711.

** *Bag of juvenile books*, p. 2, and in his book, written in German, on the mode of writing Hebrew in German letters.

and the Jews had one common origin from Adam; on which point the reader may consult the Mithridates of Gesner, Phil. Camerarius,* and the special treatises on the Gypsies by J. Thomasius and Ahasuerus Fritsch.

3. The mistake of some, who have asserted that there have been men hairy over the whole body, rough, and with a shaggy skin,†—whereas such people never really existed,—has occurred in two ways: either some kinds of apes or monkeys have been, by way of joke, called men; or when men, covered altogether with skins, the shaggy part turned outside, as I showed was done by the Lapps, were seen by strangers, and especially by the inhabitants of warmer regions, almost entirely ignorant of that kind of clothing, the shaggy exterior was thought to be the body itself, and so these stories were propagated, both popularly and in literary records.

4. There is one thing which is particularly observed in some nations, and brought forward as a proof of their different origin from other men, who are without nostrils, and with apish faces, and almost without noses. It has, however, been proved that this is not natural, but is principally due to that foolish and common custom they have, in obedience to which those nations tear out the nostrils of infants by main force, as we know occurs among the Hottentots by the ocular testimony of P. Kolbe, according to the account in his agreeable and accurate description of the Cape of Good Hope, p. 371 and 567 of the German edition.

5. In the same way, the Amazons are no more single-breasted by nature than these Hottentots are one-testicled, or than castrated eunuchs are; but as Hippocrates tells us, "They have no right breast; for in earliest infancy the mothers tear it out, and cauterise it with an instrument of brass made for this purpose, and heated red hot, so that it may not grow again, in order that all the vital energy and strength may be diverted to the right arm and shoulder." They did this, in

* *Hora subseciv.*, lib. 1, c. xvii.

† Otherwise of the Huns, Ammian., xxxi, 2. "As soon as ever their children are born, they gash their cheeks deeply with knives, so that the naturall upshoot of hair is stopped by thick scars, and so they grow old without any of the honours of a beard, like eunuchs."

order that they might shoot better, and to prevent the right breast being any impediment to the use of the bow, as P. Petit has observed, following Ptolemy, Justin, Eustathius, and Isidore. Others have noticed the same thing about the pendulous and elongated udders of other women,* that even this is in a great part due to manners and customs which override nature.

6. Thus, too, the deformed shape of the head in men, which, according to report, exists in some regions of the New World, is due entirely to the barbarous custom they have of distorting the heads of infants as soon as they are born,† which I find attributed to many by Peter Hispalis, after whom, also, H. Kornmann tells us,‡ "There has lately been discovered in the New World, in a province of Peru, a tribe called Caraqui, who have very broad faces, and no occiput or sinciput; for as soon as ever the child is born, its head is compressed by planks before and behind, so that its whole face is flattened and broadened, and the occiput and the whole head becomes broad and thin."§ So, also, it is not nature, but custom, which has made the feet of the Chinese women so very small, since they are fond of squeezing and compressing them in infants by main force, and hold in high esteem the remarkable smallness which results, as a great beauty.‖ However, they force nature so much that few of those thus treated live beyond their

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* Juv. *Sat.*, xiii, 162. The females of Lemnos have large breasts, because they give their infants suck, not in their arms, but from behind, on their shoulders.

† Hippocrates, *De aere, aquis, et locis.* "When the infant is born, they shape its soft head with their hands, and make it increase in length; hence the macrocephali. See t. i, p. 348. The Tuditani have oblong heads. Buxtorf, *Lexico. Talm.*, p. 1385. On the Caribs, who squeeze the heads of their children so that they may be like the vault of heaven, see Labat, *Journ. litt.*, t. 12, P. ii, 247. In the third Council of Lima, a. 1585, can. 74, the practice of the Indians of distorting the heads of their children is prohibited: Aguirre, *Concil. Hisp. et Novi Orbis*, t. iv, p. 431. On the skull of a North American Indian, see *Mém. Acad. Sci.*, p. 445, 1722. The Egyptians have very hard heads, the Persians, fragile; Herod., iii, 12, who gives as the reason, that the Egyptians shave their children's heads that the skull may harden in the sun: see also T. Jacobæus, *Diss. de distinguendis cadaveribus per crania*, Hafn., 1709.

‡ *Silva*, c. xxxv, p. 5.

§ *De miraculis vivorum*, p. 67.

‖ *Journ. des savans*, p. 10, 1728. M. Gentil, *Nouveau voyage autour du monde*, t. ii, p. 45.

fortieth year. So, also, they take great pains to have long, wide, open, and pendulous ears; and also use great force to elongate their eyes and make them narrow, and their nostrils compressed, which seems to them the first step towards beauty of form. I say nothing of what we are told about the long and pendulous ears of certain northern nations, for I have shown that it is by mistake they have been attributed to them.

7. Nor has any one supposed that the Psylli of Libya, or the Marsi of Italy have a different origin from that of other people; or that it is by some native and congenital power that they manage to disarm serpents of their poison, and send dangerous lizards to sleep with the touch, or suck poison from wounds with impunity, as we read in many authors after Herodotus, such as Plutarch and Xiphilin; but such powers are rightly attributed to bold dexterity, and the skill of long continued habit. The same opinion ought to be held about the Tentyrit a people of Egypt, who, by no diversity of nature or origin, but through wonderful diligence improved by art, put to flight and got the better of crocodiles, on whom see Pliny and Strabo. As to those things which are told us about families of charmers, they are due, not to nature, but to cunning or deceit; and so also about the Enhydrobii, who, either by art or use, are enabled to pass a short time under the water; or else it is a pun upon the name, because they pass a great part of their lives on ships, as the Amaxobii do on waggons. It was not even natural for the anthropophagi to feed on human flesh, but a savage custom, which probably began through some actual necessity.

8. In *Aboa literata,* mention is made of a work by Laurentius Quist, of Bioerneburg, *Diss. de quatuor generibus mulierum,* Aboa, 1698, 4to. As I have not seen it, I do not know whether he refers that quaternion rather to a diversity of customs, as I suspect, or to external form, or some other variety. This I am sure of, no kind of woman can be produced, as the

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* *Ib.*, p. 46, 48. † *Cato minor.*, p. 787. ‡ *Vita Aug.*, p. 62.
§ See Job Ludolph, *Comment. ad hist. Ethiopicam*, p. 137, and Harduin ad Plin., t. ii, p. 7.
‖ Chap. viii, 25. ¶ Chap. xvii, p. 626.

consort of mankind, but which can and must owe its origin to a common descent, with ourselves, from Adam as the author of the race. As to the diversity of languages, which are very different from each other, there are two very powerful reasons why they cannot be opposed as a sort of hobgoblin to the common origin of man: one is that learned and ingenious men, such as P. Masson and O. Rudbeck, jun., and others, have shown that it is impossible to deny the existence of a great affinity between languages which seem to be very different from each other; the other is, that it is not wonderful, considering the many divergent colonies, which in the long lapse of time and amidst such a variety of men and climates, that the very traces of the primeval tongue should be effaced. See T. S. Bayer, in the preface to the *Museum Sinicum*, pp. 30, 100. "In the small communities of the early world, when fathers and mothers possibly laboured under some defect of the tongue, the throat, or the nostrils, they handed down to their posterity instances of the same kind of speech. Thus, the Malabars do not make use of their lips in enunciation so easily as we do; we can scarcely pronounce the words of the Arabians, the Ethiopians and the Armenians, nor can they in turn pronounce ours. The Ethiopians and Hottentots rejoice in thrusting the ends of their tongues against the palate and teeth with a certain crackling noise. The Tunguses rather vomit their words from a strumous throat than utter them. The Chinese dislike the canine letters; others rather hiss than speak."

Conclusion.

Thus, then, from all these various facts, which up to this time have been collected together, nothing can be deduced, as I have shown, to invalidate the credit which is due to the inspired writer, Moses, who derives all mankind from the protoplast of one parent. One remark I have still to make, that the vastness of the ocean which separates the continents, and the corresponding isolation of the land, cannot afford a sufficient argument to show that it is incredible that the antipodes, and the inhabitants of the New World, are descended from

the same stock as ourselves, or cannot be numbered among the posterity of Adam. I do not want to make a great collection of what has been copiously noted by learned men in entire and special treatises about the origin of the Americans, the traces of the Old World which have been found in the New, the concurrence of institutions, the comparative proximity of the land of each continent towards the north, the extensive commerce and maritime expeditions of the ancient Carthaginians, and other nations. One fact is enough for my purpose, and I think it has been placed beyond all doubt, that for a long time it might very easily and very frequently have happened, that through the mistakes of navigators,—which must have been very often the case in early times, or at all events when people were actually on an expedition,—tempests would suddenly arise and compel them to go out of their course, and bring them to other shores and lands lying under another climate. Not only is it clear that this might have taken place, but nothing but a miracle could have prevented its being done during so many ages of that continuous and rough navigation, when we all know that such accidents are by no means rare, even to the most experienced sailors, who have the advantage of being acquainted with the magnet and the course of the winds.

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Chap. I. On the opinion and arguments of those who contend that various species of men of different origin exist on our planet. Against those who dream of the eternity of mankind, and the perpetual succession of human generations, taking each other up in order. S. 1. Against the Emp. Julian who asserts that a number of men were produced at once by God. 2. On

Peyrere, and the confuters of the stories of the præ-Adamites. 3. The opinions of Theoph. Paracelsus, Giordano Bruno, and others, upon the derivation of the origin of man, from different protoplasts. 4. The division of mankind into five different species by a celebrated traveller.

Chap. II. On the false traditions about the human form, which seem properly attributable to fable. 2. Blemyæ with no heads. 3. Nisitæ with three or four eyes; others with eyes in the shoulders, or breast, or a single one in the forehead. 4. Panotii with ears which cover the whole body. 5. The Hippopodes with feet like horses. 6. Feet on the back of the legs. 7. Essay of H. Gimmi on fabulous men. 8. Tales of the upper and under demons; suppositious children; transformation of men into beasts rejected. 9. Tales of tiger-men and goat-footed satyrs; also of Scylla, the Stymphalis, Nereids, Sirens, and Harpies, and their pictures.

Chap. III. On stories which, though true, are wrongly ascribed to men, or ought to be ascribed to human monsters. 1. Apes and monkeys given out as men. 2. Monstrous fish, resembling in some way the human form. 3. People with horns, hermaphrodites, and other human monsters. 4, 5, 6. Nothing in these to prove that they do not spring from Adam.

Chap. IV. On Giants, Pygmies, and Negroes. Providence has wisely provided for the stature of man; and much which has been said of giants is fabulous. 2. Some men have exceeded the common stature. 3. Possibly, also, nations; inquiry into the causes of increase or decrease. 4. Though what is said of pygmies may be false, still there are certainly dwarfs, etc. 5. No argument that they do not come from Adam. 6. On the habit and colour of the Negroes, etc., 7, Due to climate and mode of life. 8. Effect of these on plants, animals, and man.

Chap. V. On things brought about by human customs and institutions. 1. Staining the skin: Gypsies: T. Lehmann. 2. Men taken to be rough and hairy. 3. Flattening the nose in infancy. 4. Amazons, etc. 5. Flattened heads, feet, etc. 6. Psylli, Marsi, Anthropophagi, etc. 7. L. Quist.

Conclusion.

Part II.

On the Anthropology of Linnæus.—1735-1776.

The publication of the first edition of the *Systema Naturæ* took place in 1735. It is difficult at the present day to form an idea of the courage that must have been necessary to put forth those few folio pages, at the end of which Man, for the first time, was classed as one with the rest of the animal creation. As I shall have to make constant reference to the various editions of the *Systema Naturæ*, and the changes made in them by the author, according to the changes which naturally took place in his views from time to time, I shall commence by giving the tabulary view of these editions, printed by Linnæus himself in the twelfth, as he calls it, and last edition which he issued.

EDITIONS OF THE SYSTEMA NATURÆ.

1 Leydæ, 1735
2 Holmiæ, 1740, 8vo, p. 80.
3 Halle, 1740, *id. cum* 1.
4 Paris, 1744, *id. cum* 2.
5 Halle, 1747, p. 88, *id. cum* 2.
6 Holmiæ, t. 8, 1748.
7 Lips., 1748, *id. cum* 6.
8 Holmiæ, 1753, p. 136.
9 Leydæ, 1756, *id. cum* 6.
10 Holmiæ, 1758, 8vo, *auc. à me ipso.*
11 Lips., 1762, *prodiit vitiosa.*
12 Holmiæ, 1760, ult.

I have examined all these editions, except the eighth, which I have not been able to find, with these results :—

In the first edition, man is thus treated* (1735) :—

CLASSIS I.—QUADRUPEDIA.

Corpus hirsutum. *Pedes* quatuor. Feminæ vivipar., lactiferæ.

ANTHROPOMORPHA. *Dentes* primores utrinque, vel nulli.	Homo.	Nosce te ipsum.	
	Simia.	Anteriores. *Digiti* 5.	Posteriores. 5.
		Posteriores anterioribus similes.	
	Bradypus.	*Digiti* 3 vel 2.	3.

PARADOXON.

"The satyr, tailed, hairy, bearded, with a human body, much given to gesticulations, extremely lascivious, is a species of ape, if one has ever been seen. The *tailed men*, also, of whom modern travellers relate so much, is of the same genus."

Here we see that man is not only considered as an animal, but even a quadruped, and placed in the same Order with the ape and the sloth; and by the motto, *Nosce te ipsum*, the task of distinguishing him further is wittily cast upon the reader. The second edition was published in 1740. In it, man is treated thus :—

SYSTEMA NATURÆ.—ED. 1740.

CLASSIS I. — Quadrupedia. ORDO I. — Anthropomorpha. *Dentes* primores utrinque quatuor, aut nulli.

1. Homo. *Nosce te ipsum.*—*Homo* variat. : Europæus albus, Americanus rubescens, Asiaticus fuscus, Africanus niger.
2. Simia. *Os dentatum. Pedes pentactyli scandentes.* Mammæ *pectorales.*

   Simia mammis quaternis; capite ad aures crinito. Animal cynocephalum, tardigradum dictum, simii species. Seb. 1, p. 55, t. 35, f. 1, 2.

   Simiarum species descriptæ non sunt, nec earum differentiæ detectæ. E. gr. *Papio, Satyrus, Cercopithecus, Cynocephalus.*

* I give the original Latin of the text throughout.

3. Bradypus. *Os dentatum. Pedes scandentes.* Mammæ II, *pectorales.*
   Bradypus manibus tridactylis, cauda brevi. Ai s. ignavus gracilis Americanus. Seb. 1, p. 53.
   Bradypus manibus didactylis, cauda nulla. Tardigradus ceylanicus. Seb. 1, p. 54.
4. Myrmecophaga. Os edentulum. Pedes incedentes. Mammæ viii, abdominales: ventrales 6, pectorales 2.
   Myrmecophaga manibus tridactilis, plantis pentadactylis. Tamandua-guacu Brasiliensibus. Raj. 241.
   Myrmecophaga manibus monodactylis, plantis tetradactylis.

Here we have the four geographical varieties, whilst the ant-eater is added to the Order; the *paradoxon* is the same. The third edition was published in the same year at Halle, in Latin and German. It is so far like the first that the ant-eater is not included in the Order; and like the second, because the varieties of man are given. It was issued with the goodwill of the author. The fourth edition was published at Paris in 1744, with the *Fundamenta botanica.* It scarcely differs from the second as regards man. The fifth is the same as the second. The sixth was published at Stockholm in 1748. In it the ant-eater is no longer included in the first Order of quadrupeds, which contains, as in the first, man, the ape, and the sloth. The arrangement is, in fact, the same; but there is added this quaint note upon man :—

"Know thyself, theologically; *that you are created with an immortal soul, after the image of God.*

"Morally; *that you alone are blessed with a rational soul for the glory of your great Creator.*

"Naturally; *that you are the lord of animals, and the ultimate end of creation, for whose sake all other things have been made.*

"Physiologically; *that you are a most perfect and wonderful machine.*

"Dietetically; *that the Parent of nature has given you kindred animals to be to you for use and food.*

"Pathologically, *what a fragile bubble you are, and exposed to a thousand calamities.*

"*If you understand these things, you are* man, *and a genus very distinct from all others.*

The *Paradoxa* are dropped in this edition. The seventh, published at Leipzig in the same year, appears to be the same. The eighth, of 1753, as I have already said, I have never seen, but it cannot differ much from the last two, for the ninth, of 1756, is exactly the same. We now come to the tenth, which was so much enlarged by Linnæus as to be almost a new work. In it the famous *observationes* are dropped, and the *Imperium Naturæ* takes their place. I mention this, but only to say that the consequent reflections would rather find place in a work on general zoology than on anthropology. What relates to man in the tenth edition, I give at full length; and may say here, that the edition reckoned as the eleventh by Linnæus himself, is also stated by him to be spurious and faulty; whilst the *principal* additions made in the twelfth, and last (1760), have been inserted in the notes; the others, consisting only of one or two additional notes in the original from the classics.

TENTH EDITION, 1758.—Generum characteres compendiosi,—

I. PRIMATES:—1. Homo, *Nosce te ipsum.*
2. Simia, *Dentes laniarii, hinc remoti.*
3. Lemur, *Dentes primores inferiores.*
4. Vespertilio *Manus palmatæ volatiles.*

I. PRIMATES.—Dentes primores superiores IV, paralleli.
Mammæ pectorales II.

1. Homo, *Nosce te ipsum.*

Sapiens.—1. H. diurnus; *varians cultura, loco.*

Ferus tetrapus, mutus, hirsutus. *Juvenis ursinus Lithuanus.* 1661. *Juvenis lupinus Hessensis.* 1344. *Juvenis ovinus Hibernus.* Tulp. *obs.* IV, 9. *Juvenis Hannoveranus. Pueri* 2 *Pyrenaici.* 1719. *Johannes Leodicensis.**

Americanus. a. rufus, cholericus, rectus.

Pilis nigris, rectis crassis; *Naribus* patulis; *Facie*

* To these are added in the twelfth ed., *Juvenis bovinus Bambergensis.* Camerar., *Puella Campanica,* 1731. *Puella Transisalana,* 1717.

ephelitica; *Mento* subimberbi. *Pertinax*, hilaris, liber. *Pingit* se lineis dædalis rubris. *Regitur* consuetudine.

Europæus. β. albus, sanguineus, torosus.

Pilis flavescentibus prolixis. *Oculis* cœruleis. *Levis*, acutissimus, inventor. *Tegitur* vestimentis arctis. *Regitur*, Ritibus.

Asiaticus. γ. luridus, melancholicus, rigidus.

Pilis nigricantibus. *Oculis* fuscis. *Severus*, fastuosus, avarus. *Tegitur* indumentis laxis. *Regitur* opinionibus.

Afer. δ. niger, phlegmaticus, laxus.

Pilis atris, contortuplicatis. *Cute* holosericea. *Naso*, simo. *Labiis* tumidus. *Feminis* sinus pudoris, *Mammæ* lactantes prolixæ. *Vafer*, segnis, negligens. *Unguit* se pingui. *Regitur* arbitrio.

Monstrosus. ε. solo (*a*) arte (*b*, *c*).

a. *Alpini* parvi, agiles, timidi.
Patagonici magni, segnes.

b. *Monorchides* ut minus fertiles: Hottentotti.
Junceæ puellæ abdomine attenuato: Europæ.

c. *Macrocephali*, capite conico: Chinenses.
Plagiocephali, capite anticæ compresso: Canadenses.
Habitat inter Tropicos* *sponte gratisque: per reliquam* Telluris *totam continentem coactæ.*

[Here follows a long *description*.]

Differt itaque a reliquis corpore erecto nudo, et piloso capite, superciliis, ciliisque, tandem pube, axillis, maribusque mento. Feminis nymphæ et clitoris: mammæ 2 pectorales. Caput cerebro omnium maximo: uvula: facies abdomini parallela, nuda: naso prominente: compresso, brevior: mento prominente: cauda nulla. Pedes talis incedentes.

Troglodytes 2. H. nocturnus.

Homo sylvestris Orang Outang. *Bont. Jav.*, 84, s. 84. Kakurlacko, *Kjæp. itin.*, c. 86. Dalin, *Orat.* 5. *Habitat in* Æthiopiæ *conterminis* (Plin.) *in* Javæ, Amboinæ, Ternatæ, *speluncis.* Corpus *album, incessu erectum, nostro dimidio minus.* Pili *albi, contortuplicati.* Oculi *orbiculati:* iride, pupillaque *aurea.* Visus *lateralis, nocturnus.* Ætas xxv annorum. Die

* In ed. xii, *Palmis lotophagus. Hospitatur extra* tropicos *sub novercante Cerere, carnivorus.*

cæcutit, latet; Noctu, *videt, exit, furatur.* Loquitur *sibilo: Cogitat, credit sui causa factam tellurem, se aliquando iterum fore imperantem, si fides peregrinatoribus.*

2. Simia.

3. Lemur.

4. Vespertilio.*

Note I.—To know oneself is the first step of wisdom, and the saying of Solon, which was anciently written in letters of gold over the temple of Diana.

Physiologically.—That you are made up of nerves, intertwined with fibres, of a machine which though delicate, grows up to be a very perfect one, furnished with almost all faculties, and more than all other animals. "Nature cast man on the day of his birth, naked upon the bare ground, an animal to be swaddled both as to hands and feet, although it is by and bye to rule all others: which can know nothing except by being taught; can do nothing, neither walk, nor eat, nor anything else spontaneously by nature," Plin. You see what sort of life nature has promised us, which took care that tears should be the omen of the newly born.

Dietetically.—That you are happy, if you only know it, in health and tranquillity; that you are preserved by *moderation*, destroyed by *excess*, affected by *change*, overthrown by *unaccustomed accidents*, hardened by *custom*; omnivorous, with an elaborate kitchen, pleasant by its very faults, bristling with fire and wine. "Hunger is for the poor, fastidiousness for the rich man," Seneca.

Pathologically.—That whilst you breathe you are a puffed-up bubble, and hang like a ball in a moment of passing time "For earth nourishes nothing weaker than man," Homer. "Nothing has a more precarious life; nothing so many diseases, cares, and dangers. The whole period of every age is short; half is spent in something like death; we must not count the years of infancy, for they are without sense; nor those of old age which are scarcely living. The senses grow dull; the members crawl, our sight, hearing, gait, and teeth,

* Here we meet for the first time with the word *Primates;* under this are included man, the ape, the lemur, and the bat. The Sloth at last disappears.

the instruments of nutrition die out first," Plin. "Thus a great part of death has already taken place, whatever is past death holds. All this living mass, whatever of it you see, or whatever of it you can imagine to exist, nature will speedily recall and entomb. Death summons all alike; whether the gods be pleased or angry we must die," Seneca.

Naturally.—That you, the miracle of nature's audacity, the chief of animals, for whose sake nature has produced everything, are an animal, weeping, laughing, singing, speaking, docile, judging, wondering, very wise, but delicate, naked, defenceless by nature, exposed to all the contempt of fortune, dependent upon the assistance of others, of anxious mind, and desirous of protection, of wavering spirit, obstinate in hope, querulous in life, very slow in gaining wisdom. You are a despiser of time which is past and gone, a robber of the active present, one who prizes the dubious future in a life which is short, very precious, and irrevocable. Thus passes away the first day, which is the best, to miserable mortals; one is summoned to his daily labour by laborious want; another luxury confines and suffocates highly bred; another is agitated by unresting ambition; another by solitude; another by the crowd who are always besieging his portals. One grieves to find himself with children, another over their loss; our tears cease to come long before our want of them is gone. But how far soever our misfortunes carry us; we accumulate dangers, we rush upon the unknown, we are angry without being injured, like wild beasts we kill people that we know nothing of; we ask for favourable winds, in order that we may be carried to war; earth, wide as it is, does not seem enough for our deaths," Seneca. "Against other animals dissimilar beings unite, but most of the misfortunes of man come from man," Plin.

Politically.—That you hold that to be right which is merely wrong made public, which clothes you in the shroud of custom as soon as you are born, nourishes, educates, brings you up, rules you, according to which you are held to be honest, strong, wise, of good morals; thus governed you live according to custom, but not according to reason. That you, being one of those that perish, since no one can receive the gift of birth

with impunity, ask as a favour to be the last led to execution; whilst meanwhile, drunk with prosperity, your contention is to lay up for to-morrow the counters of fortune, and use your words madly, and pursue those who differ from you theologically with hatred, and excite all sorts of tumults, not in order to be free, but merely to change your master; you consume irrevocable time in trifles; you revolve immortal and eternal things in your mind, you dispose of your most distant posterity, forgetful of your condition you build up new hopes, whilst meanwhile death seizes you as you are about these distant aims, and as in your agony you open your eyes, you observe, as in a dream, "Thus, we live like immortals, and die like mortals," Seneca.

Morally.—That in an uncultivated state you are foolish, lascivious, imitative, ambitious, prodigal, anxious, cunning, austere, envious, avaricious and get *transformed*, so as to be attentive, chaste, considerate, modest, sober, tranquil, sincere, soft, beneficent, content. "The only animal who shares sorrow, luxury, ambition, avarice, and the desire of life; and whose cares extend even beyond itself into futurity," Plin.

Theologically.—That you are the ultimate end of creation; have been introduced into this planet, the work of the omnipotent; to contemplate the universe by wise reason, drawing its conclusions from the senses; so as to recognise an omnipotent, omniscient, immeasurable and eternal God from his works.

(*What else has been revealed must be explained by theologians.*)

"For there are two things which lead to the knowledge of God—Creation and Scripture," Augustine. "So God is to be discovered from nature, and re-discovered by learning," Tertullian. Man alone contemplates God, one and the same author both of nature and revelation.

"Learn what God
Has made you, and the state he's placed you in."—Pers., iii, 71.

NOTE II.—I cannot make out that the *genus* troglodyte is different from man, although I have given the subject all the consideration possible, unless I assume some uncertain characteristic, which is not constant in other genera. The corner

teeth, which stand quite close to the rest; the nymphæ of the Hottentots which no ape has, are not sufficient to class them amongst the apes. Let those who chance to be eye-witnesses, find out in what way even some characteristics exist by which this genus may be separated from man; "for when we deal with apes we must be an ape," Apollodor.

There is no doubt that the troglodyte is certainly not of the same *species* as man, nor of common descent or blood with us, so that no one must suppose it a mere variety, for the existence of the *membrana nictitans** alone is sufficient to disprove this. I have been very much surprised at the hair of the African, which, even when white, is curled; and I have collected the causes of varieties in plants, the domestic fowl, but have been able to come to no conclusion as to the albinoes (*de mauris albis*) amongst the blacks. Nor do I say that† the troglodytes of Pliny are Præ-Adamites, although we are the final handiwork of the Creator.

Homo caudatus hirsutus,‡ Maupertuis, *Epist.* 7. Kjop. *itin.* 79. Bont. *Jav.* 85. Aldrovand. *Digit.* 249? An inhabitant of the antarctic globe,§ unknown to us, and therefore I cannot tell whether it belongs to the genus of ape or man. It is surprising that it can strike fire, and also eat flesh, although it devours it raw, according to the report of travellers.

Simia quam similis turpissima bestia nobis.—*Ennius.*

Apes have the breasts, uvula, uterus, eyebrows, muscles of speech and nails of man, *but not* the rete mirabile, clitoris, or nymphæ.

If the *Systema Naturæ* had been the only work in which Linnæus had treated of man, the task of unfolding what seems to have been the changes which his mind underwent on his precise zoological position, would have been sufficiently difficult. But there are incidental notices and hints on the subject in several of his voluminous writings, besides the express

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* Ed. xii, and the length of the hands.
† Ed. xii, "these children of darkness are," etc.
‡ Ed. xii, "Lucifer: homo caudatus. *Amœn. Ac.* vi, p. 70, *Maupert.*," etc.
§ Meaning probably "antipodes."

dissertation, *Anthropomorpha*, which though nominally by Hoppius, Linnæus seems by referring to it in the notes cited above, to adopt completely as his own. It will be necessary to endeavour to arrange these more or less in chronological order, and besides, to consider them in connexion with his varying views on species and their origin, if we wish to give an honest account of the anthropology of Linnæus.

The chain, scale, order, or gradation of nature are words employed by naturalists, and after them by scientific writers in general, in two very different senses.

It was thought in very early times that there existed such a thing as an order established by nature among her productions, and that order was the one in which everything had been formed from its origin. Passing over the doubtful expressions of Aristotle, Belon, and Newton, I come to the beginning of the seventeenth century. In the year 1721 appeared the work of Bradley, and in 1735, the *Systema Naturæ* of Linnæus, which are at once the earliest, and perhaps the most opposed of the two systems which each make use of the same term,—order, or scale of nature. The observations of Lamarck* on the two opinions held in his day, apply with little alteration to those two systems.

"*Conclusion received up to this time.* Nature (or its author), in creating animals, foresaw all the possible kinds of circumstances in which they would have to live, and has given to every species a permanent organisation as well as a form determined and invariable in its parts, which compel that species to live in the places and climates where it is found, and to preserve there the habits observed in it.

"My *particular conclusion.* Nature produced successively all species of animals, commencing with the most imperfect and most simple, and terminated her work with the most perfect, complicating gradually their organisation. As these animals for the most part spread themselves over all the habitable regions of the globe, every species has acquired, through the influence of the circumstances in which it is found, the

* Lamarck, *Philosophie Zoologique*, tom. i, p. 265, ed. 1830.

habits we find it to have, and the modifications in its parts which observation discovers in it."

That Lamarck has correctly described the first opinion, is proved by the expressions of Linnæus in his *Politia Naturæ*.* "When man had spent a little time in this world, by degrees he would perceive some links of order, and at last the greatest order in the highest confusion, and of such an extraordinary kind, that he would with admiration be obliged to admit that it was very difficult, not to say impossible, to find any beginning or end to the divine works: for all these things move in a circle.

"We ought to go from the most simple bodies to the most complex.

"Animals were made for plants.

"For *à posteriori* I see that one plant, wherever it may be placed, might multiply so much that it would exclude all others. For suppose that the tobacco plant every year produced 40,329 seeds, and that no animal was ever employed in eating it, such a plant would soon destroy all the others. And I am of the opinion that it is impossible that anything which has ever been established by the all-wise Creator can ever disappear, or lose its rank and proper position. . . .

"And this opinion of mine is confirmed by every observation I can make on the series of nature. For then, I see clearly, that animals were first of all made for plants, and not plants for animals, except with a secondary purpose. So that I do not know whether the world could well hold together if one single species of animals only were wanting."

Linnæus here uses the words *Naturæ series*, and the like, in this sense. He thinks the Creator so completely planned out the whole visible arrangement that there was a place for everything, and everything was put in its place. The idea of extinct species never seems to have occurred to Linnæus. The slightest knowledge of palæontology must have been fatal to his idea of the chain or scale of nature.

The order observed in creation would have appeared to merit

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* *Amœn. Acad.*, vi, 17, anno 1760.

exactly the same approval from Linnæus, had the distinctions to be seen between different creatures been of the most trenchant and indisputable kind. He praised what he found, because it was there. Nature presented itself to his eyes as a polity; and it never seems to have struck him that polities or states are frequently, or one may say invariably, but very rough and indifferent arrangements. He follows Moses, but forgets the Fall, which was meant to account for the apparent disorder now existing in creation. To Linnæus, that appearance only existed in the mind of man. Everything was and is in its place, and will always remain exactly where it is; but man has not yet found out the key. Still the series of nature remains perfect and immutable. Though Linnæus said that nature made no leaps, still he thought she took steps. Now, what is the difference between a step and a jump? What he understood by that was, that the differences which separated one species from another, though not so great as to be perceptible to the commonest observer, were, on the other hand, sufficiently so as to be capable of being distinguished by human industry. This is clearly a most arbitrary theory, and seems to me essentially bound up with the teleological idea, that man was created in order that the world might not be without some creature which could appreciate it. The countless ages which have elapsed prior to the appearance of man are a sufficient answer to this theory.

The mind of Linnæus was one which could not rest in a state of uncertainty. He does not appear to have possessed that faculty, which is so highly prized in modern times, of suspending his judgment upon doubtful questions in the absence of sufficient facts to authorise a definite, or at all events, a reasonable conclusion. This was at once his weakness and his strength; for it is clear that it is to a strong natural inclination to define his knowledge that we owe the tables to which he gave the name of *The System of Nature*. We have seen how man is placed in those tables, in the same class and order with the ape and the sloth. We have now to learn what Linnæus understood by the words Class, Order, Genus (of which there were three, both at first and finally, in his

Order of *Anthropomorpha*), and Species. The three first of the *observations on the three kingdoms of nature* must be carefully perused in the first instance. They are as follows :—

"1. When we examine the works of God, it is more than clear enough to all, that every living thing is propagated from eggs, and that every egg produces an offspring exactly like its parent: hence, no new species are produced at this time of the day.

"2. Individuals are multiplied by generation. Hence there is a larger number of individuals of each species than there was in the beginning.

"3. If we go back, and reckon the multiplication of individuals in each species to have multiplied almost always in the same way, the series at last terminates in a single ancestor, whether that ancestor consists in a single hermaphrodite (as is commonly the case with plants), or from two individuals, that is, one male and one female, as is generally the case with animals."

These *observations* are repeated in the first nine editions of *Systema Naturæ;* but they merely show what Linnæus understood by species, at least in 1735.

In 1736, the next year, appeared the first part of the *Fundamenta Botanica,* in which is contained the following axioms :*

"In the beginning of things, reason instructs us that one single pair was created of every species of living creatures.

"*Species* and *genus* are always the work of nature; varieties, often that of art, class, and order, the result of nature and art united."

This last axiom is of the greatest importance; for whatever other changes the mind of Linnæus may have gone through, he never seems to have supposed that one species of animals, at least, could ever be transmuted into another.

Thus, in 1743, we find him writing as follows :†—

Page 437.—"7. A single pair, one of each sex, of each species, of living creatures, was created in the beginning."

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* *Fundam. Botan.*, 132.

† *Oratio de telluris habitabilis incremento,* 12th April, 1743, in *Amœn. Acad.*, ii, p. 430, etc.

"8. We believe, on divine testimony, that God created a single human pair,—one male and one female.

"9. The inspired writer, Moses, relates that they were placed in the garden of Eden; and that there Adam imposed names on all the animals which were brought before him by God.

"10. By a single pair of each sex, I mean a single male and a single female, in all those species of living animals where the organs of generation are divided in two parts, and where one is given to the one sex, and one to the other.

"11. There are certain classes of animated beings which have both organs of generation in one individual; of these I assert that one single individual was alone created in the beginning.

"16. I do not think I shall be far from the truth, if I say, that all the land, in the infancy of the world, was submerged beneath the water, and covered by a vast ocean, except a single island in that immense sea, in which all animals could conveniently live, and plants flourish and increase.

"46. If we imagine Paradise to have been situated under the equator, it will at once be understood how this might have been the case (that is, the existence there of all animals), if only a lofty mountain rose above its plains."

And again, in 1751, thus:*—

"Daily experience shows more and more that all male and female animals remain within their own species; and by the law of nature—that is, by love—are drawn to members of their own species, unite and propagate their families, and very seldom break this rule to go to other species. Nor can we see without wonder how the fœtus not only resembles the mother in the external form and face, but also the father, to such an extent that sometimes the female has the appearance and mind of the father, and sometimes the male that of the mother. So we must continue to wonder why species are thus included and remain within their own families, and why they do not mix with other species.

. . . . "Hybrids are possible; as the mule: among birds,

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* *Plantæ Hybridæ* (Resp. Haartmann), Upsal, 23rd Nov., 1751, in *Amœn. Acad.*, iii, p. 30.

the canary. But even in this way we cannot step over the wonderful arrangements of God: for these hybrid species, although not without genitals, still cannot propagate their families.

"If am asked, whether new species of plants can arise, or do daily arise, by the mixture of two different plants? And if I were to answer, according to theoretical principles, and as far as I can see myself, I could with freedom give my opinion only in the negative."

And in 1754:*—

"Men, and all animals, increase and multiply in such a manner that however few at first, their numbers are continually and gradually increasing. If we trace them backwards, from a greater to a lesser number, we at length arrive at one original pair.

"If we consider the generation of animals, we find that each produces an offspring after its own kind . . . so that all living things, plants, animals, and even mankind themselves, form one chain of universal being from the beginning to the end of the world."

"Of all the species originally formed by the Deity, not one is destroyed."

"When we subject the human body to the knife of the anatomist, in order to find in the structure of its internal organs something which we do not observe in other animals to account for this operation, we are obliged to own the vanity of our researches; we must, therefore, necessarily ascribe this prerogative to something altogether *immaterial*, which the Creator has given to man alone, and which we call soul.

"Nature always proceeds in her accustomed order, for her laws are unchangeable; the omniscient God has instituted them, and they admit of no improvement.

"It is so evident that the continent is gradually and continually increasing by the decrease of waters, that we want no other information of it than what nature gives us: mountains and valleys, petrifactions and the strata of the earth . . . pro-

* Pref. to *Museum Regis Adolphi Friderici*, Upsal, 1754.

claim it aloud. As the dry land increases at this day, so it is probable that it has all along gradually extended itself from the beginning: if we therefore inquire into the original appearance of the earth, we shall find reason to conclude that, instead of the present wide-extended regions, one small island only was, in the beginning, raised above the surface of the waters.

"If we trace back the multiplication of all plants and animals, as we did that of mankind, we must stop at one original pair of each species."

And in 1759:*—

"When God framed this terrestrial globe, he clothed and adorned it with many thousands of different species of plants, which we still see every year springing up from the earth, as so many witnesses of his infinite wisdom; and finally, in order that not one of those which he had created might perish, he arranged by economical laws how they might all be conveniently preserved.

P. 44. "In order that this science (economy) might be built upon an unwavering foundation, it is necessary that three very firm stones should be placed under it to form such a foundation.

"The *first* is, that each and every species which has been created by God should be properly distinguished and recognised, both of earths and stones, of plants and trees, of insects, fishes, birds, and all other animals.

"The *second*, that investigations should be made about every species, as to its mode of propagation, locality, food, nature, and affinity.

"The *third*, that the duty of each, whether subjects or rulers, in the great polity of the world should be investigated. This being done, the foundation of private economy would at last be laid, which is nothing else than natural science applied to the necessities of man. If one single ring or link is missing in the chain of nature,—which is what we must follow to a point,—we are immediately diverted from the path into an

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* *Programma quo ad audiend. orationem aditialem*, M. Joh. Lastbohm *invitavit*, C. L., Upsal, 11th Dec., 1759, in *Amœn. Acad.*, x, p. 40.

obscure wilderness; we stumble upon stones, we are hurt with thorns, we stick in the mud, and satyrs laugh and jeer at us as mere project makers."

And finally, in 1772 :*—

P. 88. "The *polity*, instituted by nature, rests principally on three points :—

"That all things may be preserved in their vigour,

So that one family shall not expel another," etc., etc., etc.

"The *fundamental laws*, which nature has enacted in its polity, are the following :—

1. Every created species must be preserved:

That nothing may perish which God has made," etc., etc.

P. 97. "Finio itaq. cum Davide,—

"O Jehova! quam ampla sunt tua opera," etc.

There are, indeed, a few passages in the works of Linnæus which might lead some to say that his early views on the fixity of species underwent considerable alteration. They are contained in essays published in the *Amœnitates Academicæ*, and we will assume that they represent his ideas. The first occurs in his account of the *Peloria*, in 1744; and the second in 1760, twelve years previous to the discourse last quoted of 1772.

On the *Peloria*, which was first discovered in 1742, he says,†—

P. 70. "That new species (*novas species*), or even genera, can arise in the vegetable kingdom from the union of different species, seems a paradox; meantime, observations seem to show that it may be so. Why are all the *Cacti* found in America? Why so many species of *aloe* and *geranium* at the Cape of Good Hope?" etc., etc.

"Numerous varieties of many species may be observed by attention. Time and observation will determine what is fact. I do not put these things forward as proved, but as problematical, so that others may investigate the matter more closely . . . .

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* *Deliciæ Naturæ: Oratio recitata in templo cath. Upsal.*, 14th Dec., 1772, à C. L.

† *Peloria* (Resp. Rudberg), 19th Dec., 1744, *Amœn. Acad.*, i, p. 55.

P. 72. "If it could be proved that *Peloria* is a hybrid species, sprung from *Linaria* and some other plant, we should have a new fact in the vegetable kingdom, and the progress would be much greater than what is the case in the animal kingdom; for there the hybrids have no power of propagation, —mules, for instance, and other animals. But that the *Peloria* can be propagated is clear from this, that it has perfect seeds, and multiplies freely and spontaneously in its native soil. One thing, however, should be made the subject of future investigations, whether a *Linaria* has ever sprung from the seeds of a *Peloria?* for if not, as seems probable from the observations already made, and if it remains constant, then this astonishing consequence follows, namely, that it may be that *new species spring up in the vegetable kingdom;* that *genera, different in fructification, still rejoice in the same force and nature;* further, that *one and the same genus has diverse fructifications.* But by this the foundation of fructification, which is also the foundation of all scientific botany, is struck away, and the natural classes of plants are broken into*; so that all who know anything of our art will very properly be astonished with our *Peloria,* as a stupendous production of nature."

And he thus writes in 1759:*—

"The day will perhaps come which will show that numerous *Gerania Africana* and *Mesembryanthema,* and numerous *species* of the said *genera,* have had, perhaps, their origin from this fact,—that a foreign parent has fecundated the female plant. And although hybrids are often as sterile in the vegetable as in the animal kingdom, still they are not universally so; for there are many exceptions, at all events in the *Tragopogon* above mentioned. Hence, perhaps, botanists will one day accept the following as a new rule:—

"*That all species may be considered as congeners which have sprung from the same mother,* or the same medullary substance."

And in 1762 thus:†—

"I have long nourished a suspicion, nor do I now dare to give it out as an undoubted truth, but only propose it by way

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* *Amœn. Acad.,* vi, p. 12. † *Ibid.,* p. 296.

of hypothesis, namely, that all species of the same genus constituted originally but one species, but were afterwards propagated by hybrid generation; so that all congeners have been generated from one mother, and that different species have been made of them from having different fathers. . . . . No doubt this will be a very important business for posterity; and many experiments must be tried which, if successful, will convert the present hypothesis into an axiom, and which may afford a key to genera in nature, whilst, perhaps, it may turn out more proper to ascribe species to the effect of time." "Whether these species sprung in the very beginning directly from the hand of the Creator, or whether they are propagated in process of time through nature, the executive of the Creator, will not be so easy to demonstrate, although various new experiments may appear subsequently to point that way; but we are still in want of many experiments before the thing is made sufficiently clear. But if this shall be confirmed by experiment, the theory of the genera of plants will be completely cleared up, and they will be determined from the fundamental point of their fructification."* . . . . "Perhaps this theory will seem astonishing to many, inasmuch as it gives a handle to the idea that we can imagine the existence of new species, and that one might be inclined to think that, in consequence, the whole polity and economy of nature would be upset. As to the first point, I believe, not without reason, that species—such as there are at this date in the age of the world—have been produced in as great numbers and kinds as can be produced with any facility. But I dare not swear that there are not now in Europe more plants than there were one hundred and forty years ago, when Bauhin published his *Pinax*."

"Thirdly. That in the beginning, the number of genera corresponded to that of individuals; and plants being then fecundated by others of different genera, gave birth to *species*; as many as have since been produced, the fructification of the maternal plant remaining unchanged in the offspring, with the habit of the plant changed according to the male."†

* *Ibid.*, p. 298. † *Ibid.*, p. 301.

And in 1760 he writes thus :*—

"P. 125. I go on to hybrid plants, and we shall see whether, or in what way, such are really produced. I have seen myself, and will enumerate three or four true hybrid plants, which first appeared in my time : *Veronica spuria, Delphinium hybridum, Hieracium hybridum, Tragopogon hybridum,* etc.

"There can be no doubt but what these are really new species, produced by hybrid generation. From all these we learn, that the hybrid offspring, so far as regards the medullary substance, the internal parts, and the fructification, is the exact image of the mother : but as to the leaves, and the other external parts, of the father. They therefore afford a new foundation, on which much may be erected by naturalists. For it seems to follow from this, that many species of those plants which are of the same genus were in the beginning only one plant, and have sprung from this hybrid generation." . . . . "Gerania easily led botanists to believe, that there are as many different species of the same genus in plants as there are commixtures of flowers, and in turn, that genera are nothing else than plants sprung from the same mother, but different fathers. But whether all these species are the products of time, or whether in the beginning of things the Creator has limited these paths to a certain definite number of species, I dare not positively say. This, however, I am persuaded of, that this mode of multiplication does not destroy the system and economy of nature, since I observe every day that insects which feed upon one species of a genus are often contented with another."

On these passages I will proceed to quote the remarks of M. Geoffroy St. Hilaire.†

"These passages are as clear as possible ; there is no need to interpret ; translation is enough. It is no longer doubtful that Linnæus, from 1759 to 1762,‡ was inclined to admit the

* *Disquisitio de sexu plantarum,* 6th September, 1760, in *Amœn. Acad.,* ix, p. 100, etc.

† *Histoire générale de l'histoire naturelle,* ii, p. 379.

‡ Probably sooner; not only from 1759, the date of Ramstræm's thesis, but at least from 1757, as we shall see. When Linnæus put out his views in 1759, it is in terms which show a great confidence in his hypothesis. "The

existence of a multitude of species* more or less recent; but of what origin, and how produced? By *hybridity*, and not, according to an expression very much in vogue at that date, by degeneration or degenerescence; but by the mixture, supposed to be prolific, of originally existing type, and in no way by their alteration under the influence of climate and circumstance. Linnæus even here sees no derivative species, distinguished by peculiar and new characters; but only mixed species, resulting from a combination more or less varied of original characters.

"Is this the doctrine of variability, such as we shall see it inaugurated, precisely at the same epoch, by our immortal Buffon? such as it has been conceived and developed by Lamarck, and again by Geoffroy St. Hilaire and his school? The existence of mixed or intermediate species, produced by hybrid generations, is one hypothesis; the existence of derivative species, resulting from modifications gradually produced which become hereditary, is another, radically distinct from the first. Both no doubt are reconcileable, but logically independent. That of Linnæus may be shown to be false, without that of Buffon and Lamarck being in any way affected; and so if the falsity of the latter was demonstrated, it would leave untouched the question of the fecundity of hybrids.

"The views given out by Linnæus in 1759 and 1762, are therefore by no means those of Lamarck and the modern school of variability. Bnt they are not the less well worth attention, and that school may well observe in them, if not an agreement with their own doctrines, at least an attack, and a very powerful one, against the opposite doctrines by the very hands of their principal defender. Linnæus, the thorough partisan, and the principal one, during a quarter of a century, of the immutability of type, at last recognised himself, since he tried to explain it, the possible production of new species; and by so doing throws doubt upon everything which he had

future," says he, "may well demonstrate its correctness: *venerit forte dies quæ ostendet.*"

* *Fundam. fructif., Amœn. Ac., loc. cit.*, p. 296. Further on (p. 300), the author extends his views to the whole natural Order. I say nothing here of the views of Linnæus on the parts played by the male and female.

asserted. Where he used to think a solution had been arrived at, there remains, according to his own question, only a question to settle (*à resoudre*).

"If any more proof is wanting, it is at hand, and though negative, no one can deny its importance. Authors have scarcely remarked, and above all have never explained a difference, which however is well worthy of attention, between the first and latest editions of the *Systema naturæ*. In the tenth, which was so much re-written by the author, that it may almost be called a new work, we look in vain for the statement, *nullæ speciæ novæ;* and the whole of that very remarkable passage which Linnæus made in turn an exordium and one of his final conclusions. Why was this? we now see very clearly why. In what had been for him, during twenty years, a fundamental notion, Linnæus ceased to see anything but a bare hypothesis, and he effaced it from his book.*"

With the earlier part of these observations I thoroughly agree; but I entirely dissent from the passages of Linnæus which are referred to as 'a very powerful attack against the opposite doctrines (that is, of fixity of species) by the very hands of their principal defender.' In the first place Linnæus expressly limits the varieties caused by generation to the *vegetable kingdom*. And it is remarkable that he does not quote the Peloria as an instance of variation in his essay of 1762. He had probably discovered by that time that it was a mere freak of nature; and, secondly, I cannot attach any importance to the omission of the *observations* in the tenth edition of the *Systema naturæ*. Since 1744, the date of Linnæus on the Peloria, six editions of that book, with the consent and additions of the author, had been issued with the *observations* attached. Linnæus may well have supposed that the numerous copies of his work which had been spread over all Europe, presented quite a sufficient repetition of those axioms to prevent any misapprehension of his real views. Geoffroy St. Hilaire expressly tells us, what must be at once apparent, that the tenth edition, so much enlarged as it was, and which

* It was in 1757 that Linnæus remodelled his tenth edition of the *Systema Naturæ*. It appeared in 1758 and 1759.

appeared in 1758, must have been remodelled some little time previously, and we can scarcely suppose that if Linnæus had intended even a tacit withdrawal of those axioms which formed the ground-work of his system, that he would have allowed them to re-appear, with the sanction of his name, at the very time when he was diligently preparing to supplant them. It is much more reasonable to suppose that the *Imperium naturæ*, which occupies their place in the tenth and twelfth editions, was intended to correspond to the increase in the volume of the work. Add to this the passage quoted of 1759 and 1772, and I think there can remain no doubt that Linnæus held to the last his opinion that species never transgressed their limits, or that essentially new species were never created, at all events in the animal, and most probably not even in the vegetable kingdom.

Coming down to man, I will explain the objects of the preceding remarks. Order and class being, according to Linnæus, the offspring of human art, which has only in part divined the plans of nature, he did not mean to lay that great stress upon them that is now done on the one hand by those who wish to make of man a separate kingdom, or class, or sub-class; or on the other by those, who believing in the transmutation of species, think their purpose obtained by placing man and the ape in the same family or genus. To him the distinction of species was all sufficient.

The honesty of Linnæus, which drew down upon him such severe censures from De Pauw, Buffon, and Blumenbach, is neither therefore deserving of any extraordinary praise, nor certainly of any censure conceived in a theological sense. It will have been observed, that in the tenth edition he expressly states that the *Troglodytes* cannot be of the same species, though it may be of the same genus, with man. There, indeed, he gives a zoological reason, but his usual arguments were deduced from different considerations.

Thus in 1739, in the interval between the first and second editions of the *Systema naturæ*, he writes thus :*—

* *Oratio de memorabilibus in insectis*, 3rd Oct., 1739, *Amœn. Acad.*, ii, p. 388.

"P. 391. I said that nature had laid down one rule for all, and commanded man to be of use to all, and by uniting all forces to advance the common good. But what is the principal faculty that we ought to consecrate to this our high duty? Surely that, in which we excel all other animals. . . . . Nature has made that part more conspicuous in each animal in which it excels the others. The elephant has the largest mass of brain amongst quadrupeds; the parrot amongst birds; the whale amongst fishes. And each of these are more cunning than the others. But not one of them has so great a brain as man, where I am thoroughly persuaded the immortal mind has its abode; because all the nerves which are subject to the human will proceed from the brain. And so it is our business to use that reason properly, in which we excel all others. We have no vesture like other animals, but reason has found out a thousand ways of dress. . . . . So it is reason in which man is pre-eminent. In no other faculty does he so much excel other animals."

In 1746 appeared the *Fauna Suecica*,* the preface to which contains these remarks upon man:—

"PREFACE.—Amongst all the miracles of the terraqueous globe, of which enough never can be said, there is nothing greater or more distinguished than man.

"No one has any right to be angry with me, if I think fit to enumerate man amongst the quadrupeds. Man is neither a stone nor a plant, but an animal, for such is his way of living and moving; nor is he a worm, for then he would have only one foot; nor an insect, for then he would have antennæ; nor a fish, for he has no fins; nor a bird, for he has no wings. Therefore he is a quadruped, has a mouth made like that of other quadrupeds, and finally four feet, on two of which he goes, and uses the other two for prehensive purposes; and indeed, to speak the truth, as a natural historian according to the principles of science, up to the present time I have not been able to discover any character by which man can be distinguished from the ape, for there are somewhere apes who are

* *Fauna Suecica*, 8vo, Ludg. Bat., 1746.

less hairy than men, erect in position, going just like him on two feet, and recalling the human species by the use they make of their hands and feet, to such an extent, that the less educated travellers have given them out as a kind of man. Speech, indeed, seems to distinguish man from other animals; but after all this is only a sort of power or result, and not a characteristic mark taken from number, figure, proportion, or position; so that it is a matter of the most arduous investigation to describe the exact specific difference of man. But there is something in us, which cannot be seen, whence our knowledge of ourselves depends—that is, *reason*, the most noble thing of all, in which man excels to a most surprising extent all other animals.

"No one, therefore, can very easily deny, that man is an animal; and that, indeed, of the first class and order, because he is far more perfect than all the others, although he is not furnished with savage teeth, or terrible horns, or crooked talons, or venomous spikes, etc. Still he is powerful enough to exterminate and destroy the fierce lions, venomous snakes, voracious crocodiles, strong elephants, enormous whales, and quick squirrels; nay, more, every bird that lives in the air, and fish in the depths of the sea, so that there is no single animated body which can thoroughly resist him. Man is put forth upon the terraqueous globe altogether naked and defenceless; whereas Providence has furnished all other animals with skins, feathers, scales, breastplates, shields, or spikes. To others, again, wings have been given to enable them to fly; to others, fins, with which they may swim in the deep; to others, numerous feet, with which they may run quicker; but man, naked as he is, destitute of all these protections, and with only two feet to stand on, has been endowed by God above all the others with one single property—I mean reason. And this animal has made so dexterous a use of it, that he can effect numerous and important works which no other animal can do, and even presumes to pass an opinion upon his own Author and Creator; and this property, as we cannot see it with our eyes, is not only in origin, but in essence, divine. Thus, of all the inhabitants of this world, whom God has produced, that is of all and every

animal, man is the chief, and the beneficent author of nature has willed that he himself should preside over him with a marvellous and truly paternal government for his particular benefit.

"CLASS I.—QUADRUPEDS.

"1. *Anthropomorpha.—Man.*

"1. The men inhabiting Sweden are,

"*α* Goths, of tall stature, hair white and straight, the iris of the eye ashen blue.

"*β* Finns, muscular body, hair long and yellow, the iris of the eye dark.

"*γ* Lapps, small thin body, hair black, straight, short, the iris of the eye blackish.

"*δ* Various mixtures of *α* and *β*, and the others who have immigrated into the kingdom of Sweden, in the way that may be seen over all Europe.

"They are scattered over the whole of Sweden, but so that you find the first principally in the cities; the Goths in the provinces most remote from Stockholm; the Finns in the eastern coast of the Bothnian gulf; the Lapps generally by themselves in the woods of Lapland during winter, and in their Alps during summer, always living in cottages and tents, and having no houses or mansions. They plainly show from their manners, diet, clothing and language, that they are descended from the same nation as the Samoieds."

And immediately afterwards, in 1748, we have seen that in the sixth edition of the *Systema naturæ* are contained his views of the characteristics by which man is distinguished from the animals. And in the same year we find him speaking also as follows:—

Page 550.* "It is for us to inquire what man has beyond the other animals. Anatomy teaches us that man possesses heart, brain, entrails, nerves, bones, muscles; that he moves himself, touches, tastes, smells, hears, and sees, exactly like brute animals. It is, however, true that you will find two

* *Curiositas naturalis* (Olaf Sæderberg, *Resp.*), 31st June, 1748, in *Amœn. Acad.*, i, p. 541.

peculiarities in man, of which the other animals are destitute, —namely, *admiration** and *speech*. So far as the external senses go, animals perceive the same things that we do, but being destitute of any distinct perception, they cannot apply reflection to any objects whatsoever, or that attention of looking at everything, which a man does when absorbed in admiration."

Recalling the fact that in 1758 appeared the ninth edition of the *Systema Naturæ*, the extract from which is still explicit as to the distinction of man, and all his varieties, as one species, from that even of the *Troglodyte*, I come to the famous treatise of *Anthropomorpha*, read by his pupil, Hoppius, in 1760.

The first thing that strikes one's attention is, that the word anthropomorpha is not meant in the treatise to embrace all the genera which Linnæus classed under that title. Four animals alone, out of a much larger number, are described, and their exact relationship discussed. Throughout the author is careful to say that he has no doubt of their being distinct species from each other and from man, and in no way descended from common ancestors, or the offspring of hybridity. As a translation of the treatise is appended to this chapter, it is only necessary to point out the obvious wish, and at the same time, the honestly expressed incapacity of Linnæus,—incapable, too, as he was of rejecting accounts which he scarcely believed, and which we now know to be irreconcileable with each other,—to find some greater zoological distinction between man and these his nearest relations, than what he knew to obtain between what he considered to be the different varieties of man himself.

The additions to the twelfth edition of the *Systema Naturæ* in 1766 require no notice; but the last utterance of Linnæus on the subject of man, in 1772, is so like the first, as to prove that he placed the principal, if not the sole, distinction in the moral and intellectual faculties. "Man, my hearers, is dis-

* *Admiration*, or, as others say, Reason, goes over things in the same way; I prefer to notice admiration rather than reason.

tinguished from all other animals principally by *reason*, through which he surpasses them to such a degree and in so many ways, that we must confess that nature here has made its greatest leap."*

The preceding account of the anthropology of Linnæus will be found, perhaps, both intricate and tedious; but I do not know how the reader could be put in possession of his views without being led, I fear, through something like a labyrinth. I have endeavoured to supply a thread on this subject, which I do not think has ever been attempted before.

Linnæus himself was content with the firm conviction that man, on moral grounds alone, was of one descent, and of a distinct species from all other animals. But there can be no doubt that the candid way in which he stated the scientific objections which are opposed to such an assertion, have been the foundation of those modern ideas which demand, as an alternative, some specific difference between the lowest man and the highest ape, or the division of man himself into different species. Into this question it is not now for me to enter. This chapter is complete with the account of the personal views of Linnæus, and the position he must always occupy in the history of our science.

Appendix IV to Part II.

The Anthropomorpha of Linnæus.†

In the great theatre of this world, which is filled with stones, plants, and animals, most varied in kind, and infinite in number, no single one is to be found which does not clearly prove, by the laws of its organisation, multiplication, preservation, and position, that everything has been fashioned by the wonderful art of an omnipotent and omniscient Being. But amongst all these various animals there is no one which can perceive and admire these miracles of nature, if you except man.

The inquisitive man, who is principally pleased with variety, is drawn (according to his disposition) either directly or in-

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* *Oratio Recitata*, etc.

† *Amœn. Acad.*, vi, 63, Upsal, 1760.

directly to consider the works of nature, and when he is busied with them, and thus struck with admiration, must necessarily raise his mind to God, their author.

The consideration of these things has obtained the name of natural science. This term was formerly appropriated by physicians, as if all things in nature had been made for their particular art, and in this way these were the persons who taught this branch of the sciences, both in public and in private. However, in this age, the other learned men have become more knowing, and have denied them this prerogative. Even illustrious princes have, in these days, adopted this branch of knowledge for their own, as the most noble and agreeable one; and they have collected together the greatest miracles of nature, which they alone had the power of procuring, from the most widely separated countries. Such is the nature of human vision, that man has a difficulty in observing both those things which are very far off and those which are extremely near; and I am convinced that his powers of comprehension are of the same character; and that the most simple grain of sand, and the human form, are at once the most perfect of things, and the most difficult to understand.

Amongst all the productions of the terraqueous globe, nothing so much resembles mankind as the genus of the *Simiæ* (genus *Simiarum*). Their faces, hands, feet, arms, legs, breast, and intestines bear, in most respects, a strong resemblance to ours. Their habits, and ingenuity in practising tricks and jokes, besides their imitation of others (that is, their readiness in following the fashion of the age), make them so like ourselves, that it is difficult to draw any natural distinction between man and his imitator—the ape.

Many may think that there is a greater difference between the ape and man, than between day and night. But if such persons were to institute a comparison between the greatest heroes of Europe and the Hottentots who live at the Cape of Good Hope, they would find it difficult to believe that they could have had common ancestors: or if they were to compare a noble court lady with a wild man abandoned to himself, they would scarcely guess the two to be of the same species. Savages, who have

never had any education, differ from those who have led a life of business, more than the wild pear with its sharp prickles and its bitter fruit, differs from the same tree when enclosed and flourishing in a garden.

Several men have been found, and ingenious descriptions of them exist, who have passed their whole lives in woods among the brutes, whom I will here mention in order.

1. The boy found among the bears in the Grand Duchy of Lithuania, in 1661.

2. The boy found among the wolves in Hesse in 1344.

3. The boy found among the cattle in Bamberg, who is described by Camerarius.

4. The boy caught by accident amongst the sheep in Ireland, described by Tulpius. I shall pass over the *puer Hannoveranus* in 1719; and the *pueri Pyrenæi*, in the same year; and the *puella Campanica*, and all the remaining ones, of whom there is quite a multitude, and who all agree in these points:—

1. That they could not speak at all.

2. That they were all hairy.

3. That they ran about on their hands and feet, climbed up trees in a moment; were astonished at the approach of a man; were more like beasts and apes than those animals themselves: whence it follows, that it would be excessively difficult to find any natural distinction between them and the race of apes.

Not that I am unaware how great a difference there is between man and the beast, if you look at each from a moral point of view. Man is that animal whom the author of all things, I mean God, has thought fit to endow with a rational and immortal soul; but though he has reserved for man a more noble sort of life, and some other things which are to be contemplated with piety and tranquillity, all which are matters for another place, he also chose to assimilate him to the other animals. And it is my business not to go, like the cobbler, beyond my last, but to keep within appointed limits, and to consider man, with respect to all his corporeal parts, like those who investigate nature. Having done this, I can discover scarcely any mark by which man can be distinguished from

the apes, unless, perhaps, in the corner teeth alone,—a point still to be determined by experience, since neither in the face, nor in the feet, nor in the erect gait, nor in any other point of his external structure, does man differ from every one of the species of apes.

The genus of apes is generally divided into three squadrons. The first consists of those which have long tails, and are called *Cercopitheci;* the second, of those with short—as it were mutilated—tails, called *papiones;* and the third, of those with no tail at all, which are properly called apes.

The terraqueous globe seems, in the first instance, to consist of three different elements: the abyss of waters, continents, and shady forests. With respect to these last, I must observe, that within the tropics, the trees grow very thick and tall, and their tops are so bound together with climbing plants, that if you were to cut through a hundred trees, they would all still stand erect, and could not be thrown down; for the tops of the trees are so connected with the ties of the climbing plants that they cannot be separated. I must also mention that fire can do no mischief to these evergreen forests; and that almost throughout the Indies the earth has, as it were, a canopy, supported by columns, so that men may walk about and repose under its shade, as in a warm bath, otherwise it would be impossible for the inhabitants to sustain or thrive under the heat of the sun there.

In this third kind of climate, apes form the nations and the population, and enjoy their dominion in common: they pluck the fruit in their territory, and make tender leaves their vegetables, and each has his own taste, and indulges his own disposition. They bring up their progeny among singing birds and the perpetual chatter of parrots, and are particularly careful to avoid doing any harm to the nests of the birds.

The race of apes is a playful one, and the most like ourselves. In their face, bare; shoulders kept apart by means of clavicles; two *mammæ* in the breast; hands divided into fingers, armed with round nails; lashes in each eyebrow; and uvula, uterus, and muscles; and although they do not talk, in their organs of speech they agree with us, and differ from the

brutes. They often go erect, and on their hinder feet alone; they pick their food, and carry it to their mouths with their hands; they drink liquids from cocoa-nuts scooped out, and when short of water, dig wells with their feet. They are omnivorous like us; for they eat not only the same green things, as cabbages, fruit, nuts, acorns, all sorts of flowers, roots and bulbs, bread, sops, milks, but also shellfish and oysters, which they open very cleverly, insects, frogs, and sometimes flesh. They are always hunting after lice; they remove dirt from their bodies; they are as fond of games as boys, are capital rope-dancers, always clever gesticulators, at whom you can never laugh enough. They are malicious by nature, ready for every mischief, given to theft, very salacious even when pregnant. Very mindful of injuries, and difficult to be appeased; anxious, but at the same time timid hunters; imitators of every folly; very difficult to castrate; both fathers and mothers are very fond of their children, even after having had as many as nine. They run away from crocodiles and serpents, and what you would be surprised at, even from those who are ill of contagious fevers.

I should run to great lengths if I were to describe here the customs and manners of apes; but I will only say a little about those I may call our relations,—that is, of those kinds of the ape who go upright like ourselves, and stand on two feet, and in their physiognomy and the palms of their hands are exactly like ourselves. From the accounts given, I find there are four nations of them.

I. PYGMÆUS.

Simia ecaudata ferruginea, capite lacertisque pilis reversis. Homo sylvestris. Edw. av. 5, p. 6.

The pigmy is our most distant relation. Edwards has, in the book referred to, given a capital picture of it, taken from a specimen which is to be seen at London, in the Sloane Museum. Another specimen of the same kind was given by him to our President. This London pigmy was still young, only about four feet high. The nates are not bare, or rather, not so bare when compared with many apes. The head is

round, like a man's. Nose depressed, like a Hottentot's. His hair falls down from the top over his head towards his forehead, and in the same way hangs down behind his ears. The hairs on his arms, between the elbows and palm, are reversed, and lie towards the elbow, so that at the elbow they meet the others. His whole colour is iron, not much unlike a well-baked tile. Its habitat is Africa; but we know scarcely anything of its mode of living, or what its manners are. From its hind hands or feet, which come very near our hands, it seems that it approaches nearer to the apes than to us.

II. SATYRUS.

Simia ecaudata subtus nuda abdomina gibboso. Syst. Nat., 10, p. 25, n. 1.

The *Satyrus* is also a native of Africa, brought to Europe from Angola, of this we have two drawings: one, an old female quite worn out, who was drawn, when alive, for the Prince Frederick of Orange, son of Henry; it is given, with a description, in Tulpius, *Obs.* lib. 3, c. 56. The other, a young female, done by Scotinus, at London, in 1738, where it was carried alive. This differs from the other in having short hairs on the head and back; but the face, forehead, ears, breast, abdomen, arms, and legs, are nearly bare, and have scarce any hair. It is chiefly remarkable for the size of its abdomen, which, though a virgin, it has very protuberant, and is in this especially different from our young girls. And as this one has hands instead of hind feet, I do not like to assert that it has any relation with the other. It is as large as ourselves, five feet long, muscular, and knotty, so that it is bold enough to wrestle with a strong man, and to use violence against our kind, so that no women dare enter the woods alone, which are inhabited by these male apes. They are elegant and clean, and go erect. This one of Tulpius used to hold a drinking vessel with one hand, and take off the top with the other, and would half empty it, and wipe his mouth with his hand. When it went to bed, it put its head on the pillow, and covered its shoulders with the counterpane, and lay quite quiet

like a respectable woman. I have nothing more to say of the other.

III. LUCIFER.

Homo caudatus vulgo dictus. Syst. Nat., 10, p. 24.

Although this kind is tailed, I consider that it is much more nearly related to us by reason of its conformity of structure. This lives in some of the East Indian islands, nearer to the Antarctic Pole. It may also be seen in the island of Nicobar, between Bengal and Sumatra, but it has not yet allowed itself to be properly drawn by any artist. I have found a picture of it in Aldrovandus, *Digit.*, 249, that is unique, which he procured from the East Indies; it has a tail which hangs down to the feet, but most authors speak of it as much shorter.

Many travellers have mentioned it; and amongst them Nicolas Koping, son of Matthew, a Swede, who saw one in his travels, and has not badly described the male and female, somewhat in these terms:—"It was a dreadful foul animal, half black, and, like a cat, furnished with a tail; it was bare, and ran about like cats. As we came near the shore, they came off to us in boats, bringing with them some eristhacos, parrots, which they wanted to exchange for some iron articles; but when they found nobody would deal with them, they instantly strangled their parrots, and devoured them raw, in our presence. At last they ascended the ships in such numbers that we began to fear some mischief from them, so we let off the guns, at which many of them took to flight. Those who stopped, however, in the ship, came more close to us, without any fear, and all examined the corners and all the secret holes of the ship, carrying off all the iron articles that came in their way. It so happened that the pilot of our ship took five of his companions, and went in a boat to the land, to see if this country produced anything to eat. They were absent all the night; so the commander, getting impatient, sent early in the morning the larger boat to land, filled with men, and furnished with two guns. As soon as we got on shore and took out the guns, we let them off twice, when these men with tails took

flight into the woods, and then at last we were grieved to find the boat broken up into the smallest possible parts, and the bolts carried off. Afterwards, we observed some smoke on a hill, which we instantly ascended, but only found the bones and remains of our friends, whose flesh, no doubt, these pagans had devoured, after putting them to death; so we returned, astonished and stupefied, to tell what we had seen to those on board. I wish some traveller would go as an eye-witness amongst these three denizens of the world, and undertake to describe properly and clearly their natural history, so that this singular animal might be made properly known to the student of nature."*

TROGLODYTA.

Homo nocturnus, Syst. nat., 10, p. 24.

These children of darkness, who turn day into night and night into day, seem to me to be most nearly related to us. They have lived from the times of Pliny,† when they got this name, in Æthiopia, Java and Amboyna, Mount Ophir in Malacca, and in the Ternatian Islands, and in other localities also, generally in subterranean caverns. Bontius has painted them in his *Java*‡ from a living example. They are not much larger than a boy of nine years old; white in colour, and not sun-burnt, because they always go about by night; they walk erect like ourselves; the hair of their head is short, and curly by nature, like that of the Mauritanians, but at the same time is white. Their eyes are orbiculated; the pupil and iris golden, a thing which deserves particular attention. Their eyebrows hang down in front, so that their vision is oblique

* Maupertuis, *Œuvr.*, ii, p. 351, says, that "this genus is as it were half way between man and the ape; and that he would much rather spend an hour with them than in the most polished society of Europe."

† Pliny, lib. v. c. 8. "The Troglodytes excavate caves; these are their houses: their food is serpents' flesh; they make a noise, but have no voice, and thus have none of the intercourse of speech."

‡ Bontius, *Jav.*, 84, on this species:—"I saw some of either sex walking upright; first of all a woman concealing herself, with great modesty, from strange men, then covering her face with her hands and crying copiously, groaning, and expressing other human actions to such a degree that you would have said the only human attribute she was deficient in was speech. But the Javanese say that both males and females *can* speak, but do not, for fear of being made to work."

and lateral; under the upper eyelid they have the membrana nictitans, like bears and owls, and other animals which go about by night, and this is the principal mark by which they are distinguished from us. Our president met a man in Belgium, on his return from the East Indies, who said that he had seen these people himself in Java, and the description he gave of them agreed perfectly with the books of travels. This man said, besides, that a fold of skin hung down from the lower part of the abdomen, and concealed the pudenda of the woman, in which point they resemble the Hottentots who inhabit Caffraria. He reported, also, that all their teeth were contiguous, and that the corner teeth were not different, or separated by any space from the others. Dr. Brad, however, who has just come back from a seven years' journey in India, asserts most positively that the arms of these people are longer than in our race, and that when they hang down the fingers of the hands reach the knees, whilst in us they only come half way down the thigh. They lurk in their caves during the day, and are nearly blind, before they are caught by men and accustomed to the light. They see distinctly by night, which is a proof that the pupil in them is more dilated than in us. They do what they have to do in the dark, and steal from men whatever they can, or think of any use for their own necessities.

They have a language of their own which they speak in a whistle, so difficult, that scarce any one can learn it except by long association with them; and they are so incapable, according to the accounts of some, of learning our language, that they can say nothing except the affirmative and negative particles. Some authors declare that they have asserted that they formerly were the rulers of this world, but afterwards were deposed by men, and now they live in hope that a time will come when they will recover their lost empire, but not till the Greek calends.* In many places of the East Indies they are

* Dalin, in *Orat. Acad. R. Holm*:—"In the centre of Africa there is found a white sort of man, with white twisted hair, long ears, drooping eyelids, eyes with red iris, rosy pupil, and yellow transparent membrane; the sight is lateral towards both sides at the same time, but is better in the dark than

caught and made use of in houses as servants to do the lighter domestic work, as to carry water, lay the table, and take away the plates. Koping saw such an one in Amboyna, bought by the pilot, who when he was first taken could not eat cooked meat or bear the light; and when he walked, lifted his feet up high, not being used in his native woods to the level pavement he had to walk upon. The famous Rumph says that he had one of this sort for eight years in his house; but we have to regret the loss of his work upon animals, which was no doubt as superior and excellent a one as that which he published on the conchylia and the plants of the East Indies.

Thus no one can look without pleasure and great admiration at the curious and almost ridiculous mode of life of the different apes, and consequently, these we have just been considering, and which are very like men, cannot be regarded without astonishment by any student of nature. We may, therefore, wonder how it has happened, that man so desirous of knowledge has left them alone in their obscurity up to this time, and has not shown any desire to know anything of these troglodyta, who are his nearest relations. Many men pass their time in gluttony, and only think about acquiring food and wealth for themselves, got together in any possible way; and this is the case with most of those who voyage to the Indies; for all they think of is gain, and consider it beneath their business to examine nature, or study the economy of natural objects. Yet what could be a better subject of amusement, even to a sovereign, than to see in his own house the animals we can never sufficiently admire. And how easy it would be for a king to make himself possessor of them, since a whole nation contends to obey his nod? And it would be no small gain to a philosopher, if he could spend some days with one of these animals, and investigate how far the power of the human mind surpasses theirs, and what is the real difference between the brute and the rational being, to say nothing of the light

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in the light: the duration of life about twenty-five years; the body small. These creatures speak, and think that the world was made for their sakes, and they hope finally to obtain the dominion of it."

which would be obtained by the students of natural history from a perfect description of them.

As for me, I am still uncertain, by what characteristic mark the troglodytes can be distinguished from man, according to the principles of natural history. For there are so many things so alike in these kinds of apes and men, such as the structure of the almost bare body, the face, the ears, mouth, teeth, hands, breasts; and also in the food, imitation and gesticulations in those species which walk upright and are properly called *anthropomorpha,* that it is very difficult to find marks sufficient to divide the genus.

I know of course that the apes are furnished with a tail, and even those which are called *tailless,* as the *Sylvanus,* which has a very short tail, although it cannot be seen; but still a tail is in no way a generic character. However this may be, no kind of brutes approaches so near men as the apes, and especially the anthropomorpha, in which we not only see a stature exactly like our own, but very similar habits; for not only the females, but also the males cherish their young with more than paternal affection, carry them in their arms, nurse them in their bosom, take care of and defend them.

Simia quam similis turpissima bestia nobis.—Ennius.

On the two principal forms of Ancient British and Gaulish Skulls. Part II.* By John Thurnam, M.D., F.S.A., F.A.S.L.

With Appendix of Tables of Measurement.

In the measurements of skulls given in the tables in this appendix, I have confined myself to those principal dimensions which are essential for the purpose of conveying an accurate notion of the size and proportions of the several skulls embraced in them. With this object, seven measurements are given :† I. The *capacity,* expressed in English cubic inches; the capacity being ascertained by gauging with dry white sand of the sp. gr. of 1·425, and multiplying the number of ounces (av.) by 1·22. To reduce the capacity in cubic inches, as expressed in these Tables, to that in cubic centimeters, the amount must be multiplied by 16·385. II. The *horizontal circumference,* taken with a tape, passed above the orbits and over the most prominent parts of the occiput. This measurement is of great importance when, in consequence of the imperfect state of the skull or from other circumstances, the internal capacity cannot be ascertained. Of it Professor Welcker has observed, "No other skull measurement affords in itself so safe a conclusion as to the dimensions of the cranial cavity, and hence as to the weight of the brain, as the horizontal circumference."‡ III, IV, and V. These are the *three great diameters* of the skull, taken, as are the measurements which follow, with callipers; III, the *length,* measured from the glabella, about an inch above the naso-frontal suture, to the most pro-

* See pages 120-168.

† The measurements here adopted correspond, in the more important particulars, with those severally employed by Professor Van der Hoeven (*Catalogus Craniorum Divers. Gentium* (1860), by M. Broca, in his later contributions and memoirs (*Bull. de la Soc. d'Anthrop., passim*), by M. Pruner Bey (*ibid.*, t. v, p. 111), and by Professor Huxley (Lyell, *Antiquity of Man,* 1863, p. 87). Those who desire to study more minutely the dimensions, form, and proportions of the skulls of ancient Britons and Scandinavians, will find Tables of Measurements, in much greater detail, in the concluding pages of *Crania Britannica,* 1856-1865.

‡ *Wachsthum und Bau.,* p. 140.

minent part of the occiput, whether at or above the *inion* or spine. IV. The greatest *breadth*, measured between the most prominent parts of the parietal or temporal bones, as the case may be. V. The *height*, measured from the plane of the occipital foramen to the most elevated part of the vertex, about an inch behind the junction of the sagittal and coronal sutures. VI. The *length of the face-skull*, measured from the naso-frontal suture to the point of the chin. VII. The *breadth of the face-skull*, measured between the most prominent parts of the zygomata. These different measurements are expressed in linear inches and tenths, English. To convert these into millimeters, it is requisite to multiply by 2·5399. The two remaining columns, A and B, give the *relative proportion* of the breadth and height to the length, in which the latter is reduced to the common module of 1·00. The first of these proportions, A, is the important one, called the "*Cephalic Index*" by M. Broca; by which the tendency to the long or dolichocephalic form of skull on the one hand, or to the short or brachycephalic form on the other, is numerically expressed. The other, B, in like manner, expresses in numbers the tendency to the depressed or platycephalic, or to the elevated or acrocephalic form. In the two columns, the low figures point to dolichocephalism and to platycephalism, the high figures to brachycephalism and to acrocephalism respectively; whilst those of medium value represent a more regularly ovoid and more equally developed form of skull, both as respects length, breadth and height, which may be defined as orthocephalism.

It is not, indeed, without good reason, that the simple dichotomous division of skulls introduced by Professor Retzius, into the two groups of *dolichocephalic* and *brachycephalic*, is being abandoned by craniologists as artificial, inaccurate and unsatisfactory. M. Broca appears to have been the first to show this; and to divide skulls into three groups, separating from the two extreme forms of broad and long, an intermediate or medium ovoid form, called by him *mesaticephalic* (μέσατιος, middle).* In the following year, Professor Welcker discussed

* *Bull. de la Soc. d'Anthrop. de Paris*, 1861, t. ii, fasc. 4.

this question at length, coming to the same general conclusion, though apparently unaware of M. Broca's observations.* He shows, by a series of measurements of the skulls of nearly all races, that a form "which in respect to length and shortness holds a medium place", is to be admitted as forming, with long and short skulls, a natural division. This intermediate or ovoid form he names *orthocephalic*, a term which, on the ground of euphony, is perhaps preferable to the "mesaticephalic" of M. Broca. Professor Welcker appears to me warranted in classing all skulls as dolichocephalic in which the breadth does not exceed ·70 or ·71 in proportion to the length, and all in which it amounts to ·80 and upwards as brachycephalic. The figure ·75 is thus "the centre of orthocephalism". The view taken by Professor Huxley is identical. "When the transverse diameter," says the English professor, "is less than seven-tenths of the antero-posterior, the skull is *oblong* or "dolichocephalic"; when the transverse diameter is from seven-tenths to eight-tenths of the length it is *oval;* and when more than eight-tenths it is *round* or "brachycephalic."† The estimate of Professor Welcker differs somewhat from that of M. Broca, whose middle or mesaticephalic class, as deduced from a large series of skulls, from mediæval and modern cemeteries of Paris, is placed higher in the scale, though extending only from 7·77 to 7·99 (·80). With M. Broca, it is desirable to admit a *sub-dolichocephalic* and a *sub-brachycephalic* class. These appear to me to be most conveniently obtained by assuming for the absolutely orthocephalic class the three figures of ·74, ·75, and ·76; whilst the lower figures of ·73, ·72, and perhaps ·71, form the sub-dolichocephalic, and the higher figures of ·77, ·78, and ·79, the sub-brachycephalic class. We shall at least find that this method is very applicable to the right estimate of the measurements of ancient British and Gaulish skulls. With these preliminary remarks I may now proceed to observe on the Tables in succession.

* *Wachsthum und Bau.*, pp. 41-46, 57, pl. 17.

† "Lectures," *Med. Times and Gazette*, 26th March, 1864, p. 344. M. Pruner-Bey has adopted a similar classification into dolichocephalic, orthocephalic, and brachycephalic, or *ellipsoid*, *oval*, and *round* skulls.—*Bull. de la Soc. d'Anthrop.*, 1864, t. v, pp. 110-125.

Table I.—In this, as I think, very important table, I give the measurements of fifty ancient British skulls, arranged in ascending order, from the extreme of dolichocephalism on the one hand, to that of brachycephalism on the other. The fifty skulls, all of which are believed to be those of men, are arranged in two series, twenty-five being from chambered or earthen *long barrows*, and twenty-five from *round barrows*, or from small cists which were no doubt originally covered with such tumuli. Of the series from the long barrows, five are engraved and described in *Crania Britannica;* eighteen are skulls or calvaria in my collection, and the other two are in the Museum of Anatomy of the University of Oxford. Of the series from the round barrows, twenty-one are engraved and described in the work already named, and four are in my own collection. Lest it should be supposed there has been any bias in the selection of skulls favourable to a foregone conclusion, some explanation may be requisite. In the complete work, *Crania Britannica*, there are descriptions of thirty-five ancient British skulls, of which five are from long barrows, the measurements of which are given in my first series, as those of twenty-one others from round barrows are in the second. The remaining nine skulls are excluded from the Table for various reasons. One (Pl. 35), is the skull of a woman; another (Pl. 45), is that of a boy; two (Pls. 22, 55), are from Ireland; one (Pl. 21), from Orkney; one (Pl. 25), is too imperfect to give the measurement of breadth; another (Pl. 23), is mislaid, and some of the measurements not attainable; and, lastly, two (Pls. 35, 58), are from graves which, so far as appears, had not been covered by barrows either of the long or round form.

It will be seen from the Table, that the regular gradation of ascending brachycephalism is departed from only in two instances. There are two skulls in the first division with a relative breadth of ·75; and two in the second with a relative breadth of ·74. The two series meet almost exactly in the orthocephalic centre of ·75, but with this slight overlapping of the figures. In the first series, the relative breadth varies from ·67 to ·75; in the second from ·74 to ·87. The one is

essentially dolichocephalous, the other still more essentially brachycephalous. A certain number of skulls in the one series may be classed as sub-dolichocephalic, a few in the other as sub-brachycephalic, and a very few in each as orthocephalic or ovoid. But, in the sciences of observation, "it is the *averages* which afford the best evidence; they alone have an absolute value and lead to positive results". Now we find that the twenty-five skulls from long barrows have an average relative breadth of ·71, which, according to the view here adopted, is all but absolutely dolichocephalous; whilst the twenty-five skulls from the round barrows have an average relative breadth of ·81, which even exceeds the brachycephalous standard. The two classes differ nearly as much in their relative breadth as do a series of the skulls of Hindoos or Negroes from others of Germans or Slavonians.* Surely if dolichocephalism and brachycephalism have ever, as characters, a race-value, they have it in this instance. By mingling the skulls of the one category with those of the other, it is possible to modify the averages to almost any extent, in proportion to the amount of admixture, and in this way to mask and confuse the actual results. Thus, if the two classes of skulls be in equal numbers, as in the Table before us, the relative breadth would be ·76, or almost exactly that of the ovoid or orthocephalic type; and so the dolichocephalism of the one, and the brachycephalism of the other, would be equally lost sight of in such a method of analysis.

Another interesting result elicited by this Table, which may deserve treating somewhat at length, is the *capacity of the skull*. This is seen to be very high, and the difference in regard to it in the two series is small. The dolichocephalous skulls from the long barrows have an average capacity of 99 inches, or 1622 cubic centimeters; and the brachycephalous skulls from the round barrows one of 98 inches, or 1605 cubic centimeters. This large capacity cannot be entirely explained by the idea of selection; it being obvious that any which has been exercised will have been in favour of the most characteristic and best preserved, rather than of the largest, skulls.

* Comp. Welcker, *op. cit.*, *Taf.* 17.

It is, indeed, very possible, that such of the ancient Britons as were carefully buried under barrows were for the most part of the rank of chieftains; who excelled the commonalty and the slaves in mental endowment and in energy, which qualities were represented no doubt by a corresponding amplitude of cerebral development.

It is desirable to compare the capacity of our ancient British skulls with that of the skulls of various modern Europeans, ascertained by a similar method of gauging the interior of the dry cranium.* The large series of 357 skulls, obtained by M. Broca from three of the cemeteries of Paris, are shown by him to have an average capacity of 1432 cubic centimeters, or 87 inches English. As, however, half of these skulls are probably of women, we may, in order to obtain the capacity of the

* In the year 1849, I commenced the practice of gauging ancient skulls with white Calais sand, of sp. gr. 1·425. This was the method of Sir William Hamilton, who, we are told, gauged "nearly three hundred human skulls of determined sex, and thus recovered the original weight of the brain." (Monro *On the Brain*, 1831, p. 4.) The method is the same, whether we employ sand with Hamilton, lead-shot with Morton and Broca, millet-seed with Tiedemann, or pearled wheat with Welcker. The organic substances seem, however, less eligible than the inorganic (sand or shot), as their sp. gr. must be more liable to variation. In many ancient skulls, it does not suffice to stop the crevices with cotton wool, but considerable holes require to be pasted over with paper, which must be allowed to dry. To recover the weight of the brain, the difference between the specific gravity of the substance employed to gauge the skulls, and that of cerebral substance, has to be calculated. The specific gravity of this latter I have been accustomed to take at 1·040, as it would appear from the observations of Dr. Sankey (*Brit. and For. Med.-Chir. Review*, 1853, vol. xi, p. 240; comp. Dr. Bucknill, *ibid.*, 1855, vol. xv, p. 207). It may be a little less, or not more than 1·036, as the later observations of Dr. Peacock (*Pathol. Transact.*, vol. xii, 1860-61) would seem to show. This, however, makes scarcely any appreciable difference in the calculated weight of the brain, amounting, as it would do, to not more than one-fourth of an ounce avoir. The weight of the brain thus obtained by calculation, requires to be corrected by the deduction of the weight of the dura mater and the fluids. For these I deduct five ounces for the skulls of men, and four and a half ounces for those of women, being their weight as ascertained by me in several autopsies. This estimate I have since found corresponds very nearly with that of Professor Huschke, whose observations at the time were quite unknown to me. It is worth noting, that the weight of sand by which a skull is gauged, when divided by two-thirds, or ·66, very exactly represents the weight of the brain, as calculated and corrected by the more elaborate method now described. If the object in gauging a skull be simply that of ascertaining its cubic capacity, the simplest method is to measure the contained sand in a glass cylinder, graduated in cubic inches, or cubic centimeters, or in both. Where this has not been done, the ounces of sand may be converted into cubic inches by multiplying by 1·22; or it may be calculated by a more precise method, from the specific gravity of the sand, by the rule of proportion.

male skull, add to these numbers of M. Broca five per cent., or half the generally estimated difference between the male and female skull;* thus raising the capacity to 1502 cubic centimeters, or 91 inches. This gives us the great difference of 100 and 120 cubic centimeters, or of seven and eight cubic inches, in favour of the capacity of the two series of ancient British skulls as compared with that of these modern and mediæval French crania.†

A still greater difference is seen when we turn to the lucid tables of Professor Welcker, and find that the average capacity of thirty German male skulls does not exceed 1,450 cubic centimeters, or 88 inches English.‡ The difference between the capacity of these skulls and that of our ancient Britons, is one of 155 and 172 cubic centimeters, or 10 and 11 inches respectively.

Skulls of Men.	No.	Weight of Sand.	Cubic capacity. Inches.	Cubic capacity. Centimeters.
French (*Broca*)	357	74	91	1502
German (*Welcker*)	30	72	88	1450
English, etc. (*Morton* and *Meigs*)	28	77	94	1540
Ancient Britons.				
Long Barrows	18	82	99	1622
Round Barrows	18	80½	98	1605

On the other hand the difference is not so great when a comparison is instituted with the capacity of twenty-eight male skulls in the Morton collection, which were gauged by Dr. Morton and Dr. Meigs, and arranged by the latter.§ The skulls are those of Englishmen, Anglo-Americans, Irish, Germans and Swedes. The mean capacity is 1540 cubic centimeters, or 94 inches English. Even here the difference in favour of the ancient Britons is considerable, and amounts to 65 and 68 cubic centimeters, or to four inches English, for the brachycephalous, and to five for the dolichocephalous skulls.

Weight of Brain.—The great size of the ancient British skulls

* Welcker, *op. cit.*, p. 140:—"The cranial capacity of the male (1450 C. C.) is to that of the female as 100 : 90." This aphorism is confirmed by numerous observations by different authors, as to the weight of the brain in the two sexes.

† Broca, *Sur la Capacité des Crânes Parisiens.—Bull. de la Soc. d'Anthrop.* 1861, t. iii, fasc. 1.

‡ Welcker, *op. cit.*, pp. 35, 130, 140.

§ *Catalogue of Human Crania*, by J. A. Meigs, M.D., 1857, pp. 5, 17.

and of the contained encephalon is equally apparent when we compare what the weight of the brain must have been with the actual average weight of the same organ, as ascertained at the present day by different observers in various countries of Europe. The great table of the weights of the brain, principally of Germans and French, collected by the late Professor Wagner, comprises 964 instances.* This has been subjected to analysis by two able anatomists and anthropologists, Professor Broca of Paris,† and Professor Welcker of Hallé.‡ The latter confines his attention to the weight of the brain between 20 and 60 years of age, which leaves 673 examples; viz., 415 of men and 258 of women. This gives 49 ounces (av.), or 1390 grammes, as the weight of the adult male brain; and 44 ounces, or 1250 grammes, as that of the female. M. Broca excludes all the brains of insane persons in Professor Wagner's table, as well as those of others in which there may be a suspicion of disease, but retains those of persons of more than 60 years of age. The total number is thus reduced to 276, viz., 167 of men and 109 of women. The average weight thus obtained is about 48 ounces, or 1362 grammes; the diminution of one ounce being due to the presence of the brains of persons of more than 60 years; there being a slight decrease in the weight of the brain in advanced life. The same weight of nearly 48 ounces is to be deduced as that of the English male brain, as observed by Dr. Sims in the poor of London at the parochial infirmary of Marylebone;§ and in the same establishment by Dr. Boyd, from a much larger series of observations.‖ After

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* *Vorstudien des Menschl. Gehirnes*, 1860. A large proportion of Wagner's weights are those of the brains of the insane, collected by M. Parchappe in France, and by Herr Bergman in Germany. Dr. Sims's weights, likewise, enter into this table.

† *Sur le volume du Cerveau*, etc., *Bull. de la Soc. d'Anthrop.*, 1861, t. ii.

‡ *Wachsthum und Bau.*, p. 36.

§ *Med-Chir. Transactions*, vol. xix, pp. 349, 361, 1835. I follow Dr. Peacock's analysis of Dr. Sims's observations.

‖ *Tables of the Weights of the Body and Internal Organs from 2614 Post-Mortem Examinations. Phil. Trans.*, 1861, p. 241. Of the 1,459 adults whose brains were weighed by Dr. Boyd at the Marylebone Infirmary, not less than one-sixth of the whole were registered as dying from diseases of the nervous system; and Dr. Boyd informs me, that a large proportion of these were cases of acute and chronic insanity and epilepsy, and that a few were idiots; but in addition to these, there were numerous cases of apoplexy.

deducting from the entire series of 2,086, the brains of persons of less than 20 and more than 60 years, there remain 795 instances, viz., 425 of men and 370 of women, the average weight in the former being found to be nearly 48 (47·8) ounces. Dr. Boyd has also weighed the brains of 527 insane persons; from which the average weight of the male brain at the same period of life is found to be almost one ounce and a quarter less than in the other series (for the most part sane), or 46·6 ounces. These last weights are of the brains of the insane poor of Somersetshire. They differ by an excess of one-third of an ounce from my own observations of the weight at the same period of life taken from 470 autopsies of the same class of the insane in the neighbouring county of Wilts. In 174 brains of men of less than 60 years, I find the average weight to be 46·3 ounces.*

Brains of Men.	No.	20-60 yrs.		60-90 yrs.		20-90 yrs.	
		Oz. av.	Grmm.	Oz. av.	Grmm.	Oz. av.	Grmm.
Germans, French, etc.—							
(*Wagner*, after *Broca*)	167	48·3	1371	46·7	1326	48·	1362
(*Wagner*, after *Welcker*)	415	49·	1390	—	—	—	—
English, (Marylebone) (*Boyd*) ...	699	47·8	1354	45·9	1300	47·1	1334
Scotch, (Edinburgh) (*Peacock*) ...	183	50·	1417	48·8	1382	49·7	1408
Insane.							
English, (Somerset) (*Boyd*).....	294	46·6	1320	47·	1331	46·7	1323
„ (Wilts) (*Thurnam*)	257	46·3	1312	46·1	1306	46·2	1309
„ (York) (*Thurnam*)	28	48·7	1380	42·6	1207	46·3	1312
Ancient Britons (calculated weights).							
Long Barrows	18	...	...	...	...	54·	1530
Round Barrows	18	...	...	...	...	53·5	1515

The less extensive but accurate observations of Drs. Reid and Peacock, which have been carefully analysed by the latter, are principally of the brains of Scotch Lowlanders in the Royal Infirmary of Edinburgh. They comprise nearly 400 observations at all ages, of which 157 are of the brains of men, and

* The difference in the weights of the brains of women, as observed by Dr. Boyd in Somersetshire, and by me in Wilts, is considerably greater than in those of men, and amounts to very nearly 2 (1·93) oz. It was 43·18 oz. for Somerset, and 41·25 oz. for Wiltshire, in adults of less than 60 years. Formerly, at the Retreat, York, I weighed the brains of fifty-nine insane persons from all parts of England, chiefly of a more educated middle class. The numbers under sixty years of age (17 men and 11 women) are too few to yield certain averages; but the considerably greater weight which they afford, closely approaching to that of the sane brain, viz., 48·7 oz. for the men and 43 oz. for the women under sixty years, is what *à priori* might have been anticipated.

89 of women between 20 and 60 years of age. The average weight of the male brain is found to be upwards of 50 ounces, or 1417 grammes, and that of the female, a little less than 45 oz., or 1275 grammes.* It thus appears probable that the brain of the Lowland Scotch is somewhat larger than that of the English, French and Germans. It is very probable that if observations were made in a sufficient number of persons of a higher rank and more cultivated mind, the average weight of the brain would be found to exceed that hitherto obtained. However this may be, it will be seen that the weight, according to the observations before us, varies between somewhat less than 48 ounces or 1362 grammes, and somewhat more than 50 ounces or 1417 grammes. Now the average weight as calculated from the capacity of the skulls of the ancient Britons must have reached 53½ oz. for the skulls from round barrows, and 54 oz. for those from long barrows; or 1515 and 1530 grammes respectively. This is a very considerable difference, amounting to four ounces (av.) or 113 grammes.

The computed average weight of the brain in the ancient Britons corresponds very nearly with that which is assigned by Professor Welcker to simple or normal macrocephalous heads; or those which, after Virchow, have been designated by the name of *kephalonism*. "Skulls," says Welcker, "of more than 540 to 550 millimeters in horizontal circumference, (the weight of brain belonging to which is 1490 to 1560 grammes, =52⅔ to 55 ounces, av.) are to be regarded as exceptionally large. The designation of *kephalon* proposed by Virchow, might commence from this point. Men with great mental endowments fall for the most part under the definition of kephalonism. If we consider the relations of capacity, 1800 grammes (=63½ ounces av.) appears to be the greatest attainable weight of brain within a skull not pathologically enlarged.* The brain of Cuvier is perhaps the heaviest of which there is

* Tables of Weights of the Brain, etc., *Monthly Journal of Medical Science*, vol. vii (N. S. i), 1847. Dr. Peacock informs me that among the patients of the Royal Infirmary there were some Highlanders, and a few Orkney and Shetland men. The great majority were, no doubt, Lowland Scotch.

authentic record, and is said to have weighed as much as 1830 grammes, or 64½ ounces (av.), being considerably more than the maximum weight assumed by Welcker.† That of the distinguished physician of Edinburgh, Dr. Abercrombie, closely approached this standard, weighing 1785 grammes, or 63 ounces.‡ Largely developed brains are not, however, *always* connected with considerable ability, and are at times met with in a rank of life in which there is but little room for the exercise of great endowments, supposing them to exist.

In Dr. Peacock's tables, out of the 157 weights of adult male brains, there appear to have been four in which the weight ranged from 61 to 62·75 ounces, or from 1728 to 1778 grammes. The occupations of three of these are stated to have been those of a sailor, printer, and tailor, all apparently of the artisan class. It may, however, be safely concluded, that all brains of a weight of more than 55 ounces, or 1560 grammes, are extremely heavy or *kephalonous;* and that all which exceed 60 ounces, or 1700 grammes, are superlatively so. Of the former there are as many as four, and of the latter nine, out of the 36 skulls on the table, 18 from Long and 18 from Round Barrows, the capacity of which could be taken. Thus, upwards of one-third (36 per cent.), may be styled kephalonous; whilst one-ninth of the whole, or one-sixth of those from

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* *Wachsthum und Bau*, p. 140. Comp. pp. 38-40; also, *Zwei Differm., Gehirngrösse und Intelligenz*, pp. 12-19, 1863.

† I follow M. P. Broca (*Sur le Volume, etc., du Cerveau: Bull. de la Soc. d'Anthrop.*, t. ii) in giving the weight of Cuvier's brain as 1830 ("1829·96"), and not 1861 grammes, as it appears in the great table of Wagner, in which, even when thus corrected, it will still stand as the heaviest healthy brain. The difference between the two weights is little more than an ounce and a quarter, viz., 31 grammes, or 1·3 oz. av.

‡ As reported by Professor Goodsir, *Edin. Med. Surg. Journ.*, vol. lxii, p. 231. The brain of the celebrated preacher, Dr. Chalmers, is reported to have weighed 53 ounces (av.); that of the Lord Chancellor Campbell, 53¼ oz.; and that of the American statesman, Daniel Webster, 53½ oz. See the unsatisfactory article on the last case, *Edin. Med. Surg. Journ.*, April 1853, p. 355; and for the brain of Chalmers, *Edin. Month. Journ. Med.*, March 1851. The brains of each of these three distinguished men slightly exceed the standard of incipient kephalonism, as proposed by Professor Welcker. The capacity of the large English skull, compared by Dr. J. Barnard Davis with the celebrated one of Neanderthal, appears to be identical with that of Dr. Abercrombie, viz., 113 cubic inches, or 1851 cubic centimeters, implying a brain of 63 ounces, or 1785 grammes. *The Neanderthal Skull*, p. 11. *Memoirs of Anthropological Society of London*, vol. i, p. 289, 1865.

the Long Barrows, are exaggeratedly so. In these four last skulls (a 6, 11, 17, b 8), with a capacity from 109 to 112 cubic inches, the brain must have weighed from 60 to 62 ounces, or from 1700 to 1757 grammes; a weight closely corresponding with that of the brain of Dr. Abercrombie. We may fairly presume that these large skulls have been those of British chiefs, some perhaps of Druids; and that they were those of men who held their place in the rude society of the age, in virtue of that ability and energy with which, as it would appear, they were naturally and very largely endowed.

Large Brains of Men.	No.	Equivalent in sand (Oz.).	Weights. Oz. (av.).	Grams.
Incipient *Kephalonism* of Welcker	–	78¾ to 82½	52½ to 55	1490 to 1560
Extreme of *Kephalonism* of Welcker	–	95¼	63½	1800
Brain of Abercrombie	–	94½	63	1785
Brain of Cuvier	–	96½	64·4	1830
Ancient Britons.				
Long Barrows	7	88½	59	1672
„ „ largest skull (No. 11)	–	92	61⅓	1738
Round Barrows	6	85½	57	1615
„ „ largest skull (No. 8)	–	89½	59¾	1693

Ages of those buried in Long and in Round Barrows.— Before leaving Table I, a curious difference as to the probable ages of the men, the measurements of whose skulls are given in it, must be noticed. Those from the Long Barrows are chiefly of young and middle aged men; whilst a very considerable proportion of those from the Round Barrows are the skulls of the old. This remarkable difference is brought out in the following tabular arrangement. Whilst only four of the first series, as many as thirteen (or one-half) of the second, are assigned to men of upwards of 60, and of these last, eight are from 70 to 75 years of age. The *average* age, calculated from these numbers, gives a difference of ten years; that of the one being 45, and that of the other 55 years. Two explanations of this difference present themselves, both of which appear applicable. In the first place, life was perhaps actually shorter in the rude *stone period*, partly from natural causes connected with the mode of life, and partly from the accidents of war and of the chace. Secondly, we have seen

reason to infer that many of the skeletons found in the long barrows were those of slaves and dependants, who, in accordance with an extensively diffused barbarous custom, had been slaughtered at the graves of their chiefs. For such a fate, the

Probable Ages.	a. Skulls from Long Barrows.	b. Skulls from Round Barrows.
17—20	1	..
20—30	1	..
30—40	5	2
40—50	4	5
50—60	10	5
60—70	4	5
70—75	..	8
Totals	25	25
	Years.	Years.
Average Ages	45	55

young and comely would most likely be selected. The great majority of the skulls of the second series are those of single skeletons, which have occupied the place of honour in the centre of the round barrows, and they are those, doubtless, of the chiefs and principal men of the British tribes during the *bronze*, and the *bronze and iron transition periods*. They thus belong to an epoch when, in consequence of the development of the arts of material civilisation, life was more prolonged, and had perhaps become more secure. The custom of immolating slaves on the occasion of the funerals of the chiefs seems to have gradually died out; and we find that, in Gaul, Cæsar refers to it as a custom of the times immediately preceding his own.

Table II.—*Measurements of Skulls from Long Barrows.*—In this table are comprised the measurements of various skulls from Long Barrows, which have either been described in the preceding paper,—as the finds of Winterbourne Stoke, Tilshead, and Dinnington, or which have been acquired since it was written. Of the latter, brief notices may here be given. The table itself may be dismissed with very few observations. The results embodied in it accord very nearly with those in the first division of Table I, which they thus serve to confirm and illustrate. In Table II, the measurements of the skulls of women are given in a second division. The averages show that they are somewhat less dolichocephalous than those of

men. They are less elongate, and approach the ovoid or orthocephalic form. On the other hand, the vertical diameter is proportionately less than in the male skulls; the proportion of height being only as 72 to the length taken as 100; they are decidedly more platycephalic. Though not shown in these tables, the skulls of women, from the Round Barrows of the Britons, are on the whole less brachycephalous than the skulls of men from the same tombs. In both, the skulls of women tend a little to the medium, or ovoid form. On all hands we learn that it is in the skulls of men we must look for the race-characters being developed in the greatest perfection.

Skulls from Bowl's Barrow, near Imber, Wilts.—Bowl's Barrow, near Imber, South Wilts, had been opened in 1801, by Mr. Cunnington, and described by Sir R. C. Hoare.* This long barrow is ten and a half feet in elevation, and otherwise of large dimensions. About two and a half feet below the summit, near the east end, was a skeleton with a brass buckle,—a secondary interment, probably, of the Anglo-Saxon period. The skull recovered at the re-opening is of large size, oval, and somewhat platycephalic, with a very large *foramen magnum*. With it was an immense *vertebra dentata*. At the base of the barrow, at the east end, on a floor of flints regularly laid, was a pile of skeletons "thrown together promiscuously." Fourteen skulls were counted, one of which appeared to have been cut in two by a sword. Close to the skeletons was a large cist or hole cut out of the chalk-rock; and hard by were the heads and slough of the horns of seven or more oxen. No objects of art, either of stone or metal, were found. The skeletons were covered with an immense pile of sarsen stones and flints to the height of six feet, and this was surmounted with chalk-rubble or marlstone, to the complete height of ten feet and a half. I re-opened this barrow in September 1864, and at the base of it found the remains of the skeletons left there by the previous explorer, more than sixty years previously. There were four skulls or calvaria tolerably perfect, or which were restored from numerous frag-

* *Ancient Wilts*, vol. i, p. 87; comp. *Archæologia*, vol. xv, p. 340, 345.

ments. Measurements of them are given in the table. There were the fragments of the skull of a girl of eight or nine years, and portions of jaws, which implied three or four other skulls, one that of a child; being traces of altogether ten or eleven skeletons. There were several portions of cleft cranial bones, such as I have before noticed as found in long barrows. Some of them are perhaps portions of the very skull which attracted Mr. Cunnington's attention. One of the more perfect skulls (No. 211) seems to have been cleft with great violence on the left side. It will be seen that all these crania are very dolichocephalous. The first (No. 210) is a remarkable specimen of synostosis; there being no trace whatever of the sagittal suture. The form is *sub-scaphocephalic*.* The fourth skull (No. 213), may likewise owe some part of its extreme dolichocephalism to the premature and perhaps infantile obliteration of the same suture.

Skulls from Long Barrow, Oldbury, Wilts.—In the same year (1864), in digging in a chalk-pit near the ancient British camp of Oldbury, North Wiltshire, about three miles from the celebrated megalithic circles at Avebury, two or three skeletons were uncovered at the base of the east end of what turned out to be a long barrow, of low elevation. The measurements of three skulls, which, though quite dolichocephalous, are of small size, and not very characteristic, are given in the table. Two of the skulls appear to be those of women, and are in the possession of Mr. Cunnington, of Devizes, who assisted in their exhumation. The other skull, that of a man, has been added to my collection (No. 198). Near the skeletons were a number of flint flakes, with one or two cores, from which they had been broken off. At the centre of the mound was a small irregularly-shaped cist, built up with sarsen stones: it was empty. This tumulus, though of oblong form, has not the unequivocal characters of a long barrow; it appears, however, to have belonged to that class.

* This skull is more particularly described in a paper *On Synostosis of the Cranial Bones in one Class of Ancient British Skulls*, etc., read before the meeting of the British Association at Bath, Sept. 1864. See *Nat. Hist. Review*, April, 1865.

Skulls from Chambered Barrow, Charlton-Abbots, Gloucestershire.—Since the note at p. 131 was written, the chambered tumulus called Belas Knap, near Charlton-Abbots, Gloucestershire, has been further explored. Its general arrangement is the same as that at Rodmarton (*Cran. Brit.*, pl. 59); but it differs in having an exceptional orientation, lying north and south, with the broad end to the north. Near the broad end, a trilith (A), formed by three upright stones, arranged in the form of a Roman H, with a fourth flat stone laid above, was uncovered. With these stones on each side, was connected a

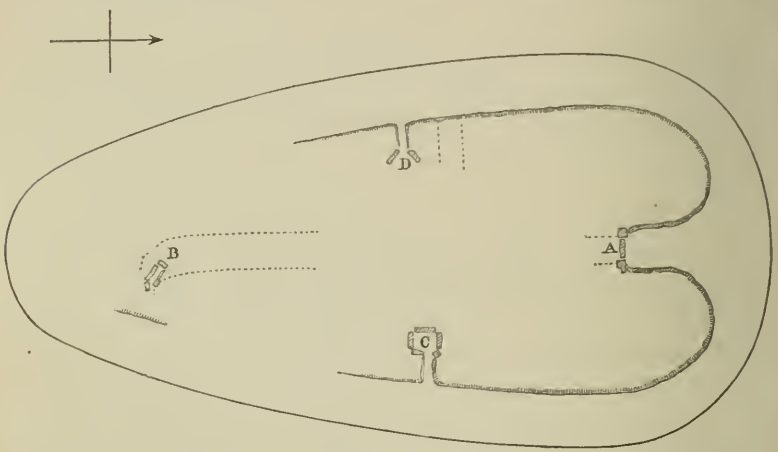

Fig. 17. *Ground-Plan of Chambered Long-Barrow, near Charlton-Abbots, Gloucestershire.—Scale, 50 feet to 1 inch.*

well-formed wall of horizontal dry masonry, which, after forming a sort of avenue leading to the trilith, curved outwards on each side, so as to embrace the entire tumulus. There was no cist or chamber at the broad end; but resting on the large flat stone was a very massive lower jaw, evidently that of an ancient Briton of about thirty years of age, with every tooth complete. On raising the stone, there were found among the rubble the skeletons of a young man of less than twenty, and of five children from six months to eight, years of age. The jaws of the adult were broken, but the teeth were seen to be slightly eroded, and the third molars to have not yet pro-

truded. The femur measured seventeen inches. This skull closely approaches the brachycephalous type, with a relative breadth of ·79; its measurements are given in the table under the letter *D*.* There is some parieto-occipital flatness, and at the coronal end of the sagittal suture is a small Wormian bone. The children's skulls are too fragmentary to permit the type, whether long or short, to be determined. In that of about eight years of age, the frontal suture is persistent. With these skeletons were many bones, tusks, and teeth of pig and horse, with several flakes of flint, one fine one with a delicately serrated edge, and two or three fragments of coarse British pottery. Were the human skeletons found in this part of the tumulus those of victims sacrificed in honour of the dead who were interred in the principal chambers; and if so, is it not probable that they were those of a different tribe, and perhaps entirely different race? The obvious difference of type is in favour of this view. At the narrow or south end of the mound a small cist, or grave, built up of flat stones (B), was uncovered. It contained four or five skeletons. The dimensions of one male and one female calvarium, obtained in a tolerably perfect condition, are given in the table under the letter B. They are both quite dolichocephalous, that of the woman extremely so. In both, the sagittal suture is extensively obliterated; and there is only one parietal foramen, which is of large size, patulous, and with rounded edges. One *femur* measures 18·5, two *tibiæ*, 14·5 inches. There were a few flint flakes, bits of pottery, boars' tusks, two tibiæ of roebuck, and a rudely finished implement of bone, with three perforations at one end. Thus far the tumulus was explored in 1863.

In the following year, more important discoveries were made. These consisted of two sepulchral chambers, one on the east, and the other on the west of the widest part of the tumulus, both opening outwards on the face of the surrounding wall. These chambers were formed of large standing stones, roofed in with others, which had been coved over so as to form

* The measurements of six skulls, distinguished by the letters *A*, *B*, *C*, *D*, *E*, and *A*, are not included in the averages, as they appear to have belonged to secondary interments, and two are those of infants.

a sort of horizontal arch. The roofs had given way, so that the chambers were filled in with rubble-stone, but otherwise appeared to be undisturbed. The eastern chamber (C) has been completely cleared; the western one (D) as yet only partially so. In the former were the remains of at least twelve skeletons, about half of which appeared to be of either sex, and all of about the middle period of life,—none less than twenty, nor more than about sixty-five years. Up to the present time, (Feb. 1865) the remains of five skeletons have been found in the western chamber. Four appeared to be those of young men of from twenty to thirty years, the fifth, that of a girl of about seven. One humerus, out of three or four from this chamber which have been preserved, presents the perforation of the olecranal fossa, which has been observed in so many ancient Gaulish skeletons from the cave of Orrouy, described further on. Of about nine femora, three from the eastern and six from the western chamber, one measures 15·7; two, 16-16·3; four, 17·3-17·7; and two, 18-18·5 inches. Two lower cervical vertebræ were anchylosed, as before found in several of the long barrows. No implements or other objects, except six horses' teeth, seem to have been found in either chamber.

The measurements of fifteen skulls from these two side chambers are given in the table. With one exception (C 2), all are of the long or narrow-oval type, and with the exception of two others (C 4, C 8), are extremely dolichocephalous. The two skulls, C 1 and C 2, are very perfect and well preserved; they present considerable difference in form. C 1 is massive and heavy, and is obviously that of a powerful man. It is of narrow and elongate form, having a relative breadth (·68) as low as that of any skull in this very dolichocephalous series. The sides are much flattened, so that it approaches the scaphoid form. The frontal is narrow and receding; the supraciliaries remarkably prominent and overhanging; the face short and narrow; the upper maxillæ deeply hollowed; the teeth much eroded and obliquely jagged. The squamous and sphenoid sutures are open; the sagittal extensively obliterated, the coronal less so, and the lambdoid less so still. The left parietal foramen is alone present; it is of large size, with gaping rounded edges.

The skull C 2 departs more than any other from the general type observed in these crania. It is sub-brachycephalous, with a relative breadth of ·77. The sex may be doubtful; but on the whole I believe it to be the skull of a woman.* Whether this implies a variation in the type of the dolichocephalous race to whom I refer this class of barrows, or whether, in this instance, and in that of the skull from near the trilith A, we have a case of admixture of the other race with prevailing brachycephalous type of the skull, can only be conjectured. The general rule is, at least, not invalidated by two apparent exceptions. That the skull before us is that of a woman, appears probable from the very light and delicate texture of the bones, the smoothness of the surfaces, and roundness of all the outlines. The mastoids and inion are of moderate size, and the supraciliaries slightly developed. On the other hand, the ascending ramus of the lower jaw is broad and rectangular, though the chin is moderately rounded. Another skull, C 5, is considerably warped, as the result of *posthumous distortion*, but its type is clearly identical with that of the others.

It is unnecessary to describe the rest of the skulls separately. On the whole, those of men correspond with C 1; and those of women have likewise an aspect in common, which in several instances approaches to a family character. This is likewise the case with the skulls of the young men from chamber D; in which the parietal tubers are more prominent than in those from the opposite chamber. In the majority of all the crania, the sagittal and coronal sutures, especially the former, are considerably effaced and ossified; and in a very considerable proportion the ossified sagittal presents a rugose and thickened appearance in the posterior third of its extent, around the seat of the parietal foramina. In scarcely any instance is there more than one of these foramina, which are remarkable for their large size, and patulous and rounded edges. The single foramen is sometimes in the edge of the right, sometimes in that of the left parietal bone.†

* The crowns of the upper incisor teeth are worn down to the very fangs.

† The skulls from Belas Knap are in the possession of L. Winterbotham,

Skulls from Long Barrow at Dinnington, West Riding, Yorkshire.—The further knowledge which has been obtained of skulls from the long barrows, has very happily not been confined to those of the south-western counties. In the table will be found the measurements of the large series from the long barrow at Dinnington, in the West Riding of Yorkshire, briefly referred to at p. 132. It will be observed, that many of these skulls are of more than average size; generally speaking, they are more highly developed than usual in this class. It is to be regretted that, owing to the circumstances under which they were recovered, by labourers employed in removing the soil of the barrow, less is known of the mode of arrangement of the skeletons than was to have been desired.

Skulls from Long Barrow near Ebberston, North Riding, Yorkshire.—Very recently, the fragmentary skulls from the long barrow, called Scamridge-Howe, near Ebberston, in the North Riding of the same county, also noticed at p. 132, have been sent to me for examination. Five of the calvaria are sufficiently perfect to be measured, and their dimensions are given in the table. These, with four others still more fragmentary, appear to be the remains of five men and four women; four from 20 to 25, and five from 40 to 65 years of age. Of another adult, the fragments are too scanty to indicate either the sex or age. In addition, there are portions of the skulls of four or five young children of from two or three to seven years; making a total of fourteen or fifteen persons. With one exception, all the skulls would seem to have been of more or less elongate dolichocephalous type. There were marks of previous disturbance in the barrow; and Mr. Greenwell believes that the excepted skull (No. 1) belonged to a *secondary interment*, which is the more probable from its porous texture and light colour,—due, perhaps, to its more superficial

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Esq., of Amberley House, Cheltenham, to whom I am indebted for every facility for their examination, and likewise for the ground-plan of the barrow. For the opportunity of examining the tumulus itself, I am under obligations to D. W. Nash, Esq., F.S.A. Its exploration has been effected through the zeal and liberality of T. W. Swinburne, Esq., of Corndean Hall.

position in the barrow. This skull is of moderately brachycephalous type, having a relative breadth of ·80; and its general form corresponds to that of the Round-barrow skulls. I have classed it as that of a man, but it is below the medium size, and as the sexual characters are not well marked, it may be female. Of the four other skulls which can be measured, two, Nos. 2, 4, are moderately (·71), and two exaggeratedly dolichocephalous (·67—·56). The two last, Nos. 3, 5, require particular notice. No. 3 is probably the calvarium of a woman of sixty years, with all the great sutures ossified and nearly effaced. It is the most elongate and narrow cranium I have ever examined; its scaphoid character being most extraordinary, considering that it is not an example of proper *scaphocephalus*, or congenital synostosis of the parietals. The sagittal suture is, however, exuberantly ossified in the interforaminal region, and the obliteration probably dates from the infantile period. There is a single patulous parietal foramen, with rounded edges, in the border of the left parietal; and very distinct traces of a *carina* along the median line of the very narrow and flat frontal. To a small extent, some of the existing narrowness of this calvarium may be due to *posthumous distortion*, the lower edges of the parietals having been pressed inwards by the superincumbent earth.* No. 5 appears to be the skull of a young man of about twenty. All the sutures are perfectly open within and without. It has the same

* *Posthumous distortion* was first observed by me during the winter of 1847-48, in skulls probably Anglo-Saxon, from the tumulus of Lamel Hill, near York (*Arch. Journ.*, vol. vi, p. 33). I at once referred it to the combined effects of moisture and pressure in the grave, and soon afterwards applied to it the name by which it is now generally known. Other examples, more extensively deformed,—for the most part Anglo-Saxon, from time to time fell under my notice. The specimen described, *Arch. Journ.*, vol. viii, p. 173, is in the British Museum. Dr. Barnard Davis, in October, 1848, observed the same form of distortion in an ancient British skull from a barrow at Alport, Derbyshire (*Cran. Brit.*, p. 37-39; where I have also described a most remarkable example from Stone, Bucks, of which a wood engraving is given). The shallow graves of the Anglo-Saxons, often in low and moist situations, are especially favourable for the production of posthumous distortions. I have since found that previously to my exploration of the Lamel-Hill tumulus, the same condition of the bones of the skull had been observed, in 1845, by MM. Serres and Robert, in skulls from the celebrated dolmen of Meudon, near Paris. "Nous devons aussi faire mention de crânes singulièrement déformés, dont le coronal, les pariétaux et

narrow frontal as No. 3, but without any trace of a central keel. There is marked annular depression in the post-coronal region; which, with the full parietal tubers, gives a slightly *klinocephalic* character to the calvarium. The left parietal foramen is a little larger than the right, corresponding with which the left parietal tuber is fuller than that of the opposite side. But for the greater development of these tubers, the skull would be almost as narrow as No. 3.

This skull (No. 5) is, moreover, of great interest, from the clear indications it affords of having been violently cleft at the time of death. The clefts affect the centre and left side of the frontal and left parietal. The numerous fragments of another skull (No. 6) could scarcely fail to convince the most incredulous of their character and origin, the edges of the divided bones being perfectly sharp and clean, and the fragments themselves having a porcelaneous character, quite distinct from that of the uncleft bones. Two, perhaps three, blows must have been inflicted on the head, probably by a blunt instrument, as a club or stone-axe. One, on the frontal region, did not at first split the skull, but broke away part of the outer table, and produced a depression and cracking of the inner. In one or two other very fragmentary skulls, including that of one child, less decided marks of cleavage are seen. The very distinct proofs of it in No. 5, and above all in No. 6, are most important, as establishing the same rites and usages in the north of the island with those I have now so often noticed in the long barrows of Wilts and Gloucestershire. Certain unfor-

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l'occipital étaient déjetés tantôt à droite, tantôt à gauche; mais nous croyons pouvoir attribuer cette bizarrerie à l'action des terres qui ont comprimé latéralement et lentement ces crânes." *Comptes Rendus de l'Acad. des Sciences*, tome xxi, Sept. 1845. The view I have so long entertained of these posthumous distortions has been much contested by English antiquaries and others (see *Athenæum*, July and August, 1859, p. 184, etc.), but appears to be now generally admitted. In France, the learned anatomists and anthropologists, MM. Quatrefages, Gratiolet and Broca, no doubt from independent observations, have altogether adopted it; and, as Professor Owen in this country had previously done, have further illustrated it by the appearances presented by the fossil bones of extinct animals.—*Bull. de la Soc. d'Anthrop.*, t. iv, p. 586. Dr. Henry Johnson has made experiments to show that this distortion is in part due to the chemical influence of free carbonic and nitric acids in the soil. (*Proc. Royal Soc.*, vol. xii, p. 149, 1862.) Prof. Wyville Thomson's paper (*On Distorted Human Skulls, Nat. Hist. Review*, Oct. 1862) may also be consulted.

tunates, slaves or other dependants, must have been slain at the obsequies of the chief, as a sacrifice to his manes, and probably in part eaten at the funeral feast. This last inference appears confirmed by the traces of burning presented by a few fragments of the bones. These, like others from the long barrows of Nympsfield and Rodmarton (*Cran. Brit.*, pl. 59) have been very imperfectly burnt, or rather charred; a condition quite distinct from that of the burnt bones from the round barrows, where cremation has been practised as a funeral rite, and in which the whole of the animal matter has been destroyed by long-continued incineration. These fragments seem to have been taken from a fire, at which a funeral feast was cooked, of which feast human flesh may have formed a part. That under certain circumstances anthropophagism was practised in Gaul and Britain, rests on the testimony of too many authors to be doubted;* and the older the date of any sepulchral monuments, the more likely are we to find in them traces of this practice. Pliny is speaking of Britain when he connects the eating of human flesh with a supposed benefit to health,† and is referring to the human sacrifices of Britain and Gaul when he says that the transition is very easy from sacrificing human beings to eating them.‡

Table III.—*Ancient Gaulish Skulls.*—Since the foregoing paper was written, I have had the opportunity, during a short visit to Paris, of examining and measuring the ancient Gaulish skulls in the collections of that city, and especially those in the gallery of anthropology in the Museum of Natural History,§

* Diodorus, lib. 5, c. xxxii; Strabo, lib. 4, c. v, § iv; Hieron. *Adv. Jovin.*, lib. ii.

† Pliny, lib. 30, § iv: "In quibus hominem occidere religiosissimum erat, *maudi vero etiam saluberrimum.*"

‡ *Id.*, lib. 7, § ii. "Nuperrime hominem immolari gentium earum more solitum; quod paulum a mandendo abest." The natives of Eastern Australia often cook and eat the flesh both of friends and foes. Morrill, who resided seventeen years amongst them, testifies to "the existence of occasional cannibalism, founded rather upon a superstitious idea of embodying the virtues or physical capabilities of a deceased friend or enemy, than from any desire for unnatural food."—*Newspapers of May*, 1863.

§ I must not omit to express my best thanks to M. le Prof. Quatrefages for the ready access which he gave me to the skulls in the museum; and to M. Jacquart, for the facilities accorded me in their examination.

and in the collection of the Society of Anthropology. The measurements of as many of these skulls as are sufficiently perfect are given in Table III, in which they are arranged according to the apparent sex, and nearly in geographical order, beginning with the north of France. I have added the names of the Gaulish tribes, within whose probable limits the sepulchral remains were in each case found. It must not, however, be supposed that the skulls are necessarily those o the several peoples named, though in many instances it is not improbable that such may be the case. It is at least believed that they are not to be attributed to a later period than that of the tribes in question. Brief descriptions of each series of skulls are here given in elucidation of the table.

1. *Skulls from Noyelles-sur-Mer* (*Somme*). *Region of the* Ambiani.—The tumulus whence these were obtained is described at p. 129, *ante*. I found four skulls in the museum marked as from this source; viz., No. 209, that described by M. de Bellogue,* and three others, Nos. 314, 315 and 317, presented by M. Boucher de Perthes. No. 315 has fallen to pieces, and 314 is very imperfect. With the exception of 317, all are more or less elongate, as stated by the original describer. This last, however, which is clearly the skull of a man, is brachycephalous (·81), and presents considerable flatness of the parieto-occipital region. There is slight post-coronal depression, and the type approximates to that of the majority of the skulls from the Orrouy cavern, described further on. It is thus seen that this supposed example of a Gaulish tumulus, with solely dolichocephalous skulls, does not stand the test of close examination.

2. *Skulls from Nogent-les-Vierges* (*Oise*). *Region of the* Bellovaci.—This series of twelve skulls of ancient Gauls, all tolerably perfect, is one of the most important yet obtained. They were presented to the museum, in 1854, by M. Houbigant, having been obtained from a sepulchral

* *Ethnog. Gauloise*, p. 173, 1861.

"grotto" or "gallery," discovered in 1816, which was soon afterwards not very perspicuously described by M. Barbié du Bocage.* In it were as many as two hundred skeletons, a knife and axe of flint, but no object of metal. The bodies, among which there appear to have been none of infants, had been placed in layers on the paved floor of the gallery, and the whole covered with a stratum of sand. Of the twelve skulls, seven appear to be those of men and five of women, and of persons from twenty to sixty years of age. I have followed the indications of M. Serres as to the sex, except as regards No. 349, which seems to me to be that of a woman; and No. 353, which I take to be that of a man. One of these male "*Bellovaque*" skulls, No. 354, could not be found, and had been replaced on its stand by one presumed to be "Gaulish," but apparently of doubtful attribution.†

M. de Belloguet is quite correct when he insists on the great difference in the type of these skulls; but is in error in his indications as to which of them are brachycephalous, and which of elongate form. Of the six male skulls, three only (Nos. 343[1], 345[3] and 346[4]) are brachycephalous (·80, ·80, and ·85). The other three are dolichocephalous or sub-dolichocephalous (·70, ·71, 74); as is the case, also, with the five skulls regarded as female, which have the relative breadth of ·69, ·72, ·72, ·72 and ·73, respectively. The brachycephalous skulls, especially Nos. 343 and 346, are very similar in general character to the short skulls from the round barrows of the ancient Britons, and present more or less of the parieto-occipital flatness so often observed in those skulls. They differ, however, in having the face smaller and somewhat less harsh and rugged, and in the presence of slight post-coronal depression, not often seen, excepting in the dolichocephalous series of our British skulls. The form and proportions of half (three) of the men's and of all the women's skulls, closely

* *Mém. de la Soc. Roy. des Antiq. de France*, t. iii, p. 298, 1821, *avec planche.*

† This substituted skull is inscribed, "Tête probablement Gauloise trouvée avec des grains . . . . le 4 Juin 1847, par Ant. Alexandre," The skull is brachycephalous (·82), with a *length* of 185, *breadth* 152, and *height* of 130 millemeters. For these last measures I am indebted to the kindness of M. Pruner Bey.

approximate to those of the crania, which, unmixed with others of brachycephalous proportions, are found in the long barrows of Britain. Indeed, No. 353[11] of the skulls of men, and 349[7] of those of women, are unusually elongate, and almost sub-scaphocephalic. One of the skulls, believed to be that of a woman, No. 347[5], has been lithographed for this memoir, from two photographs by M. Potteau: (See Plate IV). Though not so elongate as three others, it is a good example of the dolichocephalous type of this series, in which the sexual characters are not strongly marked. In nearly all are greater or less traces of post-coronal depression, and in most the occiput is full and prominent. The frontal region in several is narrow and receding, whilst in others it is somewhat elevated. The supraciliaries and nasals are moderately prominent in most; the face is rather long and narrow, and there is a slight tendency to prognathous eversion of the lower edges of the alveolar arcade. As in our British dolichocephali, the lower jaws are short and rather small, but, as in them, the chin is generally well pronounced. In No. 347[5] (Plate IV), there are several small Wormian bones in the line of the lambdoid suture; and in No. 349[7], a single large interparietal or "epactal" bone. The sutures in these skulls, excepting only No. 353[11], are distinct and generally open. The skull excepted is that of a man far advanced in life, and, as in two or three others, has the crowns of the teeth very much eroded. The brachycephalous male skull, No. 343[1], is remarkable for having, in the centre of the left parietal, a large hole, measuring 4 by $2\frac{1}{2}$ inches, with smoothly rounded edges; showing that the individual must have lived for a considerable period after he had received a very serious wound, probably in battle.

3. *Skulls from Du Val, near Senlis (Oise). Region of the* Silvanectes.—These are the skulls from the dolmen or sepulchral gallery described at p. 139, as in the Forêt de l'Ile-Adam, believed to be within the limits of the Silvanectes, a small tribe, hemmed in between the powerful tribes of the Bellovaci and Suessiones. M. de Belloguet speaks of three skulls only; but there are in the museum at least nine, and one entire

skeleton, derived from this tomb. The skulls are numbered 165 to 170 *d* respectively, and the entire skeleton, 1634. This last is in a case, hermetically sealed, in *Salle* 9, and is entered in the Catalogue as "*Squelette de Femme Gauloise Sylvanecte, provenant du dolmen du Val.*" A photograph (No. 799) of the skull, is exhibited in *Salle* 3, with those of other skulls, Nos. 166, 169, of the same series, by M. Rousseau; and there are still more successful ones by M. Potteau. The imperfect calvaria, No. 170, *a*, *b*, *c*, *d*, are mounted on a single board, with two axes, one of flint, the other of a green stone, and a vase of pottery, not of the most ancient type. The label is inscribed "*Deux silex, un vase et 4 crânes incomplet, montés sur le même plateau, et provenant du même dolmen* (*du Val*)." Two of the calvaria on this board, 170 *a* and 170 *b*, are too fragmentary to be measured. The others, like most of the ancient Gaulish skulls in the museum, have, as appears to me, been unfortunately mounted on stands with brass rods and screws; and apparently without being first properly cleansed and macerated in hot gelatine. They are hence falling to pieces, and are in great danger of being lost to science. The superior maxilla of No. 168 appears to have been lost during the two or three years since M. de Belloguet wrote; so that his observations as to the absence of prognathism cannot be verified. The measurements of the seven skulls show that three are brachycephalous, three ovoid, and one sub-dolichocephalous. The skulls of short or round form have much resemblance to those from the round barrows of the ancient Britons, as is well seen in the parieto-occipital flatness of No. 166. No. 167 is the skull of an old man, with edentulous lower jaw. The supraciliaries are moderately prominent; there is some post-coronal depression, and the occiput is full and broad. The most interesting skull of the series is No. 169, that of a man of about forty-five years. The nasals are prominent, and there is a slight degree of prognathism. There are indications of post-coronal depression, as well as of parieto-occipital flatness, and the form of the skull has clearly tended to brachycephalism. This, however, has been neutralised by the effects of an abnormal *synostosis* of the parietals: there is no trace whatever of the

sagittal suture beyond a certain rugosity in its course; it has probably been obliterated during the intra-uterine period. There is partial obliteration of the lambdoid, but the coronal suture is distinctly open.

4. *Skulls from Chamant (Oise). Region of the* Silvanectes. —These are from the dolmen at Chamant, near Senlis, already referred to in the previous part of this paper (pp. 129, 133). The dolmen seems to have been very similar to the neighbouring one of Du Val;* and the skulls derived from it have an equal right to the name of "*Sylvanectes*" with those so designated by M. Serres, from the former tomb. Four skulls from Chamant, like the series next to be described from Orrouy, are preserved in the collection of the Society of Anthropology of Paris. My notes of their examination afford but few particulars in addition to those given above. Three may be those of men, with a relative breadth of ·71, ·74, and ·78; but another, which approaches the short form, and which I should term sub-brachycephalous (·78), appears to be that of a woman. All are very imperfectly preserved, and are poor, ill-developed skulls. So far as they go, they are in favour of a dolichocephalous admixture among the Gaulish brachycephali of the stone age. The teeth are much eroded; and in one, No. III, the erosion has an oblique character. The dimensions of the long bones are in favour of their having belonged to a people of short stature.

5. *Skulls from Orrouy (Oise). Region of the* Suessiones.— This important series of skulls was obtained from the sepulchral cavern of Mont-Maigre, near Orrouy, to the north of the Autone, a tributary of the Oise, about midway between the two towns of Senlis and Compiègne. The place is just without the limits of the little tribe of Silvanectes, and must have belonged to the great and powerful Suessiones, the tribe of Belgic Gaul,

* The dolmen is very clearly described by M. P. Broca in *Bull. de la Soc. d'Anthrop.*, t. iv, p. 652; t. v, p. 636; and the skulls in t. iv, p. 513; and t. v, pp. 5, 638. M. Broca regards two of the skulls as dolichocephalous, and two as mesaticephalous; and observes, "*L'absence probable des brachycéphales dans cette sépulture de l'âge de pierre mérite d'être signalée.*"

which gave a king, Divitiacus, to the south of Britain. In a small natural cavern,* evidently prepared as a place of sepulture, were found the remains of about fifty individuals. With them were the bones of many animals, especially ruminants;

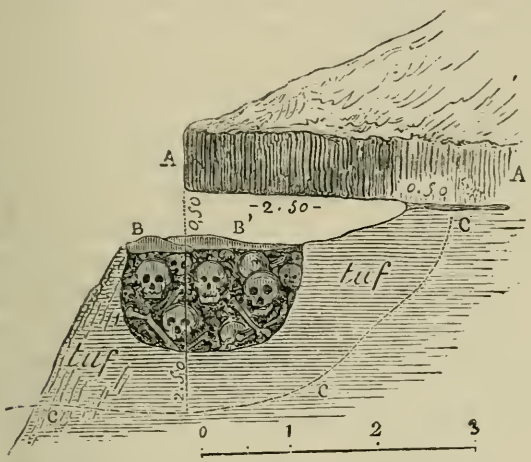

Fig. 18. *Sepulchral Cavern at Orrouy (Oise.)*

many fragments of coarse pottery, knives of chipped flint, and axes of the same, polished; and a small spoon of bronze of curious form. As, however, the exact position of this last object was not observed by the workmen, it is possible that it may have fallen into the cave subsequently to its use as a place of burial. Thus, the conclusion that the skeletons belong to the "age of bronze," may be open to some question; though as no trace of iron was found, the French anthropologists justly regard this as the most recent period to which they can be assigned. A curious circumstance, regarded by M. Broca as a family peculiarity, consists in the fossa of the olecranon being pierced by a natural hole, in eight out of thirty-four

* Described by M. P. Broca, *Bull. de la Soc. d'Anthrop.*, t. iv, pp. 510, 512; t. v, pp. 56, 450, 718: (I have not seen the conclusion of M. Broca's observations, in *fasc.* 5, p. 521). See also *Journal of the Anthropological Society of London*, vol. ii, p. cclxviii, where, however, certain typographical errors should be corrected. My description of these skulls is from my own notes and measurements, assisted by others supplied to me by M. Broca, for which, as well as for copies of casts of Nos. IV, VIII, and XI, I must express my obligations.

instances in which the humerus was preserved. The skulls are represented by twenty-one, more or less, incomplete specimens, of which sixteen are susceptible of measurement. The lower jaws are of considerable size and thickness. Of the sixteen skulls of which the measurements are given in the table, ten are classed as those of men, and six as those of women. Twelve appeared to be of persons from 30 to 55, two from 20 to 25, and two of about 70 years of age. According to the classification I have adopted, as explained on a foregoing page (p. 461), two are dolichocephalous (·71), two orthocephalous (·75-·77), four sub-brachycephalous (·78-·79), and eight brachycephalous (·80-·86). Measurement thus shows a great difference in the type; though a very considerable preponderance, or 75 per cent. of the whole, are of brachy- and sub-brachycephalous form. Inspection of the skulls reveals more striking peculiarities. The two (Nos. V, VI), which are only just excluded from the extremely dolichocephalous type, are altogether similar to the elongate or ellipsoid skulls from the long barrows of Britain, and likewise resemble those above described from the Gaulish "sepulchral gallery" at Nogent-les-Vièrges, which were also associated with skulls of brachycephalous proportions; though, in the skulls which have been preserved, we have seen that those of dolichocephalous form very much preponderate. The brachycephalous skulls from Orrouy, which are well represented by Nos. IV and XI, one of each sex (casts of which have been presented to various museums), are of medium size, and differ from most ancient British and from many Gaulish brachycephalous skulls, in the narrowness of the frontal, the smaller size and comparative shortness of the facial bones, and in the more moderate prominence of the glabellæ and supraciliaries; in all of which particulars they incline towards characters proper to the dolichocephalous type of ancient British skulls. Three, Nos. IV, VII, XIV, have the frontal suture persistent; and in most there is more or less post-coronal depression.

A third form, quite extraordinary and exceptional, is presented by eight out of the entire series of twenty-one skulls. This is well shown in Nos. I, III, XII, XXI, and especially in

No. VIII, casts of which last are found in the principal museums of Europe. No one can fail to be struck with the singularly inharmonious and strange form of these skulls, and with the contrast between the small, narrow, and low frontal, and the immensely broad and full parietal and temporal regions. The prominence of the rounded temporal bosses, separated by shallow depressions from the parietal ones above, is even more remarkable than that of the latter. A dolichocephalous forehead and a very brachycephalous middle and hind head are reunited in the same specimens. Moreover, on each side, corresponding to the lower end of the lambdoid suture, there is a considerable flatness or depression. The first notion that occurs is that this bizarre form is the result of artificial deformation, and that the post-coronal, as well as the supramastoid depressions, may have arisen from a system of bandaging: in some respects, indeed, the form corresponds with that of the annular distortion (*tête annulaire*) of Gosse.* Further inspection, however, satisfies one that the peculiar form has not been caused by art; and as it is not due to synostosis,† and as, by its presence in so many instances, pathological causes are excluded, we are compelled to seek another explanation. M. Broca's first idea as to these skulls was that their form depends upon a sort of mixture of the two other types found with them; and to this view he still, and as it seems to me justly, adheres.‡ We have here, I think, a veritable hybrid form of cranium resulting from the mixture, or

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* *Déform. Artif. du Crâne.* Compare plate ii, fig. 6 (from Foville); plate v, fig. i, 3.

† There is nothing peculiar in the condition of the sutures in these skulls. In No. VIII all are open, excepting the outer fifth of the coronal, in which obliteration has commenced.

‡ "Quelques crânes brachycéphales appartiennent à la race préceltique, d'autres, dolichocéphales, à la race celtique; quelques-uns représentent une sorte de mélange." (*Bull. de la Soc. d'Anthrop.*, t. iv, p. 512.) In this passage, the more or less hypothetical terms, pre-Celtic and Celtic, are, according to my views, inverted; they are not employed by M. Broca in his more recent communication on these skulls. (*Ibid.*, t. v, p. 720.) "Le type pariétal et le type ovale existant respectivement dans certaines races, on peut supposer d'abord que la population d'Orrouy était issue du croisement de deux races, et je le nierai d'autant moins que déjà à l'âge de la pierre, antérieur à l'âge du bronze, toutes les populations de notre pays avaient subi des mélanges de races."

crossing, under certain circumstances unknown to us, of a dolichocephalous with a brachycephalous race.

The cranial form, when not influenced by disease or distorted by art, no doubt represents in a general way that of the hemispheres and lobes of the brain. The post-coronal depression, so common in dolichocephalous skulls, and which is liable to be exaggerated by bandaging, corresponds to a normal depression between the anterior and middle lobes, in the region of the fissure of Rolando; whilst the great biparietal breadth and parieto-occipital flatness common in skulls of brachycephalous type (which last is also liable to exaggeration from artificial causes), correspond to, and doubtless depend upon, the great transverse expansion of the middle and temporal lobes, and on the comparatively abbreviated proportions of the posterior lobes of the brain in the brachycephalous races. In the Orrouy skulls, we have a very inharmonious combination of both these conditions. In them, however, there is less decided verticality of the hind head than is common in brachycephalous skulls. On the contrary, there is a certain roundness and fulness of the supra-occipital, which seems to depend on the greater development of the apices of the posterior lobes, such as is proper to dolichocephalous peoples; and is especially seen in the elongate skulls from the long barrows of Britain. In the Orrouy skulls of hybrid form, two encephalic growth-tendencies appear to me distinguishable; one, the longitudinal or fronto-occipital; the other, a transverse, or biparietal and temporal one. Now, the remarkable supramastoid depressions, visible in the hindhead of these skulls, seem to be well explained by the idea of an intersection or crossing of these two tendencies in the brain-growth; corresponding, as they must have done, to the angles formed by the posterior surfaces of the middle, the lower surfaces of the posterior and temporal lobes of the cerebrum, and the upper surface of the cerebellum.

These skulls, and especially No. VIII, agree very much in form with the remarkable Totonaque Mexican skull, minutely described by M. Gratiolet. This skull, though regarded by that distinguished, (now, alas! lamented), anatomist as normal, is of

such singular form as to be compared by him to the distorted trilobed skulls (*tête trilobée* of Gosse) of the isle of Sacrificios; just as in these Orrouy skulls we find a certain resemblance to the annularly deformed skulls (*tête annulaire, tête bilobée*) so common in France.* But for the want of a more distinct longitudinal depression along the posterior part of the sagittal suture, this Orrouy skull, No. VIII, might equally with the Totonaque specimen, be compared to the trilobed form. M. Gratiolet regarded the peculiarities of the deformed skulls of Sacrificios as artificial exaggerations of original characters; proper, as he thought proved by this Totonaque cranium, to the people of eastern Mexico.

6. *Skulls from Luzarches* (*Seine et Oise*). *Region of the* Parisii.—These skulls, from a dolmen near Luzarches, are not comprised in the table, being too imperfect for measurement. They are labelled "*No.* 204. *Trois crânes incomplets, provenant du dolmen du Compans près de Luzarches; fouilles faites en* 1854, *par M. le Prof. Serres et ses aides.*"† One of the calvaria, with a slightly flat occiput, is that of a man; the other two, with the occiput full and rounded, are probably those of women. All three, as judged of by the eye, are dolichocephalous, inclining to the medium ovoid form (·73-·74). There are teeth in two of the jaws, which are much eroded.

7. *Skulls from Meudon* (*Seine et Oise*). *Region of the* Parisii.—All the skulls hitherto described and measured are from localities in Belgic Gaul, and therefore from a region of peculiar interest to the anthropologists of England, as being that

* *Crâne de Mexicain Totonaque des environs d'Orizaba.* (*Mém. de la Soc. d'Anthrop.*, 1863, t. i, p. 391, pl. x, xi.) The last plate, representing the vertical view, shows very great similarity with that of the Orrouy skull, No. VIII. A great part of M. Gratiolet's description is equally applicable to the skull now referred to, as when he refers to "la prédominance des régions temporo-pariétales, énormément dilatées et globuleuses, sur une région frontale évidemment amoindrie;" and again, to "la présence d'une vallée ou dépression transversale qui parcourt le bord antérieur des pariétaux."

† Whether the dolmen of Compans be that known by the name of "La Pierre Turquoise," between Luzarches and Beaumont-sur-Oise, of which a notice was given by M. Hahn to the *Institut Historique*, in 1854, and which is briefly described and figured by M. Carro (*Voyage chez Celtes*, p. 145, 1857), I am not certain, though this appears probable,

whence great part of the south of Britain was ravaged and afterwards colonised, previously to the Roman conquest of Gaul and to Cæsar's expedition to our island. We have now come to skulls from places to the south of the Seine, the so-called Celtic Gaul, from whence, however, the materials are unfortunately much less abundant. In crossing the Seine, from the country of the Bellovaci, Silvanectes and Suessiones, the first tribe we come to is the small but not unimportant one of the Parisii.

The two skulls from the large dolmen at Meudon, explored by M. Eugène Robert in 1845, are fully described in the preceding pages (pp. 135-139), where wood-cuts of them are given. These two skulls are still preserved by M. Robert, at his residence at Bellevue, not far from the place of their discovery; where I was favoured with the opportunity of inspecting them and of taking the measurements, which are given in the table. Casts from these skulls were presented by M. Robert to the Museum of Natural History (Nos. 356, 357), and also to the Museum of Anatomy of the Faculty of Medicine of Paris (Nos. 149, 150). By an unfortunate error, the original skulls and both sets of casts have been erroneously labelled "*Type Kimry, homme,*" and "*Type Gall, femme;*" though the male skull is, in truth, an example of the brachycephalous *Type Gall*, and the female skull of the ovoid *Type Kimri*, of W. F. Edwards.* In addition to the casts, M. Robert presented three imperfect skulls from this dolmen to the Museum of the Faculty of Medicine; where they are catalogued as "*Crânes de Celtes,*" Nos. 146, 147 and 148. The first, 146, is labelled "*Coronal de Celt, Type Kimry, homme,*" where for "Type Kimry" read "Type Gall." No. 147 consists of the frontal and two parietals of a woman, and

* I must here correct the mistake into which I have fallen (p. 122, *ante*, note), in attributing to M. de Belloguet the error referred to in the text, the responsibility for which would appear to rest with M. Serres or his assistants. In his memoir on the Meudon discovery, M. Serres writes as follows:— "Dans les huit séances (au château de Meudon) que j'y ai consacrées, secondé des deux aides de ma chaire au Muséum, MM. Jacquart et Biscard, ainsi que de M. Robert, j'ai pu constater les faits qui suivent. J'ai reconnu que ces os ont appartenu aux deux types de la race Gauloise, au type Gall et au type Kimry."

though of ovoid or elongate type, is labelled *Type Gall.* No. 148 is the elongate calvaria of a young girl, full of earth, much broken, and falling to pieces. It is the only one of these specimens correctly labelled "*Type Kimry, femme.*" In the same museum are the casts of two nearly perfect skulls, though wanting the lower jaws, from the Meudon dolmen, presented by M. le Baron Dupotet. They are catalogued as "*Moule d'une tête de Celte,*" Nos. 174, 175, and bear each the following label, "*Tête de Druide, trouvée le* 15 *Juillet,* 1845, *dans l'avenue de Meudon, par le Baron Dupotet.*" That the skulls, of which these are casts, were from the interior of the dolmen seems proved by the note appended to the memoir of M. Serres, already quoted from the twenty-first volume of the *Comptes Rendus* (pp. 3, 13). Measurements from these casts are given in Table III. No. 174 is that of the skull of a man of nearly brachycephalous proportions (·79), and has the frontal suture present. There is none of the parieto-occipital flatness which is so marked in the male skull from the same dolmen, in the possession of M. Robert. The supraciliaries are moderately prominent; the mastoids rather large; no particular depression at the insertion of the nasals; the upper maxillæ rather short; the alveolar margins slightly everted. Neither the characters of the sex, if regarded as the skull of a man, nor that of the race, are particularly pronounced. No. 175, clearly the skull of a woman, is considerably smaller, and of ovoid form (·76). It presents slight post-coronal depression; a considerable part of the left parietal is wanting; the facial characters are very similar to those of No. 174.*

These are all the skulls from the Meudon dolmen, of which, after many inquiries, I was able to hear. Whether the five well-preserved skulls which, acccording to M. Serres, seem to have been deposited at the chateau of Meudon are still at this residence of Prince Napoleon, or whether additional ones are in the possession of M. le Baron Dupotet, I could not ascertain; but if so, it is most desirable that they should be contributed

* Copies of these casts are sold by M. Vasseur, as skulls of "Druids." They are Nos. 24 and 25 of his list.

to one of the museums of Paris. It seems that of these five skulls, three were of brachycephalous and two of ovoid type.*

8. *Skulls from Bellevue (Seine et Oise). Region of the* Parisii.—M. de Belloguet refers to three skulls in the Museum of Natural History, as having been found in close proximity to the Meudon dolmen, and regards them as part of the evidence as to the ancient Gaulish skull-form. Of this series, I found as many as eight in the museum. They are mostly very imperfect, and are numbered 341, 342, 358 (being those referred to by M. de Belloquet), 371, 372, 374, 376 and 480; and there may be others, besides 370, on the crowded shelves, which I did not see. All are labelled "*Trouvé dans les fouilles faites en 7bre*, 1845, *à Meudon* (*avenue de Bellevue*), *sous le direction de M. le Prof. d'Anthrop.* (*M. Serres*)." Attached to the stands on which they are mounted are portions of coarse red tile and pottery, evidently Roman; and on one of them part of the jaw of a pig. They appear to be generally of ovoid form; but as they doubtless are of the Roman period, they need not be further described.† It was needful, however, to distinguish them particularly, as they appear to have misled the distinguished anthropologist, Professor von Baer, who, apparently regarding them as derived from the dolmen, observes, "The skulls which are exhibited in Paris as of Celtic type are dolichocephalic, being probably derived from the grave discoveries of Meudon, upon which Serres has reported. A skull from thence is depicted in the *Indigenous Races*.‡

The particular skull last referred to by Professor von Baer has obtained considerable celebrity, a fine photograph from it, by M. Rousseau, having been made the subject of a memoir, presented to the Academy of Sciences by M. Serres in 1854.§

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* "Il y a à Meudon cinq crânes assez bien conservés. Parmi eux sont deux crânes de femme du type gall, un d'homme: les deux autres appartiennent au type kimry; l'un a appartenu à un homme, l'autre à une femme." *Comptes Rendus*, t. xxi, p. 13; *Voyages en Scandinavie*, pt. ii, p. 224.

† They appear to have belonged to the "*ossements hum. dont le monument de Meudon était environné.*" *Comptes Rendus*, xxi, p. 12. *Voyages*, etc., p. 223.

‡ By Nott and Gliddon, p. 301, 1857. Von Baer, *Bull. de l'Acad. Imp. de St. Petersbourg*, p. 261, 1860.

§ *Paléontologie Humaine: Comptes Rendus*, 14 Août, t. xxxix, 1854.

A copy of this photograph is now before me, and bears the following autograph: "*Type Celt, découvert dans l'ancien parc de Madame de Pompadour,* à Bellevue, près Paris.*" The skull itself, which is No. 199 of the museum, has been unfortunately labelled, "*Gaulois de Meudon, donné par M. le Senateur Dumas,* 1854." On the stand are portions of the jaw and thighbone of a ruminant; the skull itself is falling to pieces. The true history of this cranium is given by M. Robert.† It was not derived from Meudon, but from Bellevue, and from a spot at a considerable distance from the celebrated dolmen. It was obtained from one of several graves uncovered in 1853, in which the bodies had been laid from west to east, with the face upwards. One skull only seems to have been preserved, and this was restored by M. Robert, and by him given to M. Dumas. Not far from the graves, the workmen found numerous flint flakes, and fragments of pottery, thought to be Celtic; but the connexion of these objects with the former is quite doubtful, and the graves are probably of the Christian period. Still, no doubt the skull may be that of a Gaul of the later and, perhaps, post-Roman time; and as its form in many respects corresponds with that of the brachycephalous Gaulish skulls, I have included it in the table of measurements. It is probably that of a woman, being of the short oval form, but elevated, and inclining to the brachycephalous type, from which it departs by a somewhat round and prominent occiput. The nasals are small, and the maxillæ rather prognathous; the teeth are much eroded.

9. *Skulls from Marly-le-Roi* (*Seine et Oise*). *Region of the* Parisii.—The skull presented by M. Robert to Professor Retzius, and briefly referred to at p. 139, *ante*, was derived from a small dolmen at Marly-le-Roi, a few miles to the N.N.W. of Versailles, and probably within the limits of the Parisii or the Carnutes. I need not reproduce the description, which will

* This, no doubt, was the site of the villa built in a few months to please Madame de Pompadour, but which was pulled to pieces during the Revolution.

† *Voyages*, etc., p. 238.

be found in the original memoir, and likewise in the collected works of the late distinguished Professor Retzius. He has given a woodcut of the skull, which is of small size, and apparently that of a woman. There is some confusion and uncertainty in the measurements given by Retzius, who describes it as altogether brachycephalous.* He tells us that its form and dimensions agree very exactly with those of a skull from a chambered barrow near Stege, in the isle of Möen. A cast of this, presented by Professor Eschricht, is in the Museum of the College of Surgeons (No. 5710), where I have carefully measured it.† It is of ovoid form (·76-·77), scarcely even to be called sub-brachycephalous; and it is tolerably certain that the skull from the Marly dolmen, in the Stockholm collection, is really of the same proportions. Though neither are actually brachycephalous, they both appear to have belonged to a series and a type which were such, but from which these examples deviated towards an oval, though not dolichocephalous, form. The Stege skull has altogether the facial characters of the brachycephalous type; and the series of five skulls from that tomb have an average relative breadth of ·80 (·794); two have that of ·83 and ·85.

In the Museum of Natural History of Paris, is a really brachycephalous skull from Marly. It is labelled "*No.* 375. *Marly-le-Roi, au lieu dit 'le Champ Payen,' sous le direction de M. le Prof. d'Anthrop., Oct.* 1845. There is no proof that it was obtained from the interior of the dolmen, like that sent to Stockholm; but its proportions are very similar, and, as it seems probable that it is ancient Gaulish, I have added it to the table of measure-

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* "Le crâne vu d'en haut offre une circonférence courte, cunéiforme, ronde comme un œuf (*forma cuneato-ovata*), dont la longueur surpasse seulement la plus grande largeur d'un sixième." Retzius, in Müller, *Archiv*, p. 500, 1847; p. 111, 1858; Robert, *Voyages en Scandinavie*, pt. ii, p. 227, 1854. *Ethnologische Schriften von Anders Retzius*, p. 62, 1864. In accordance with his system, this skull was regarded by Retzius as of Iberian or Basque origin, and it is actually treated of in German by his translator, under the title, "*Ueber die Schädelform der Iberier*" (Müller, *Archiv*, *l. c.*).

† The skull itself is in the museum of the University of Copenhagen, where, with four others from the same tomb, it was measured by Dr. Barnard Davis. It is No. 16 of Table IV, appended hereto, and No. XXVIII of Table III, *Cran. Brit.*, p. 246; comp. p. 229.

ments. Though it is of somewhat larger size, yet from its small teeth, maxillæ, nasals and supraciliaries, I take it to be likewise the skull of a woman.

10. *Skull from Lozerres (Seine et Oise). Region of the* Parisii. —This skull is No. 390 of the museum, and is labelled "*Crâne ancien trouvé à Lozerres, Seine and Oise, donné par M. Jomard, Membre de l'Institut, Juin* 1854." On the stand to which it is affixed, is the tusk of a boar, no doubt found with it. There are fine photographs of this skull, of the full size, by Rousseau, and others by Potteau. Though I have been unable to ascertain more of its history, I think it probably Gaulish. The glabella and supraciliaries are very prominent, and the very deeply set nasals project abruptly; the teeth are much eroded. The hind head is large, and there is some parieto-occipital flatness. The most remarkable feature is the very extensive depression of the centre of the frontal, which rivals the form of the celebrated Neanderthal skull. This has been supposed to be the result of artificial deformation.* The depression, however, is not post-coronal, as in the annularly deformed head, and is of considerable breadth and extent. But for this abnormal anterior platycephalism, the relative breadth of the skull, ·79, might have been much greater than it is.

11. *Skull from Maintenon (Eure et Loire). Region of the* Carnutes.—I owe the measurements of two skulls, which have recently been added to the collection of the Society of Anthropology of Paris, to the kindness of M. Broca. They are from sepultures regarded as of the stone age, excavated by MM. Larry and Leguay, at Maintenon, in the department of Eure and Loire. One of the skulls is nearly complete; the other, which is quite dolichocephalous, is a mere calvarium.†

12. *Skull from Fontenay le Marmion (Calvados). Region of the* Viducasses.—The skull from the remarkable chambered tu-

* *Cran. Brit.*, p. 43: De Belloguet, *Ethnog. Gaul.*, pp. 155, 173.
† *Bull. de la Soc. d'Anthrop.*, t. v.

mulus at Fontenay, near Caen, which has been described from a cast, (p. 134 *ante*), was in 1863 presented by the Society of Antiquaries of Normandy to the Museum of Natural History of Paris, where it bears the No. 2988. The measurements in the table are from the cast.

13. *Skulls from Bougon (Deux Sèvres). Region of the* Pictavi.—These skulls, Nos. 209 *bis* and 336 of the Museum, are labelled "*Crâne trouvé en* 1843, *dans un tumulus Celtique à Bougon, donné par M. le Doctr. Teilleux.*"* The first of these skulls, probably that of a man, is most remarkable, not only for the great depression of the very retrocedent frontal, almost as marked as in the Lozerres specimen, but also for its extreme negro-like prognathism; the intermaxillaries projecting almost as in the gorilla. The very large incisors and canines are very obliquely implanted, and the crowns of all the teeth are greatly eroded. The tubercles of the upper molars resemble, in their great size, those in the jaws of Russians brought from Spitzbergen by M. Eugène Robert. The supraciliaries are remarkably full and prominent, contrasting with the very flat frontal, which makes measurement very difficult. There is slight parieto-occipital flatness, and the skull just comes within the brachycephalous division, ·80. The other skull, No. 336, is that of a woman, delicately smooth and rounded, and of elongate oval proportions, very similar to the skulls from the long barrows of England. The occiput is full; the supraciliaries scarcely at all project; the alveolar margins of the upper jaw are short, but have a slight pouting eversion, not amounting to true prognathism. When I saw this skull it was reduced to fragments, and the upper jaw was detached from the calvarium.

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* I have not seen the *Monuments Relig. Historiq. du Poitou*, § i, p. 27, 1842, where, it seems, the discovery is recorded. M. de Belloguet informs us (p. 174), that the skulls from this tumulus are described by M. Arnault as follows:—"Fronts droits, élevés, mais étroits, dents posées perpendiculairement, pommettes des joues peu saillantes, mentons presque rentrants, les lobes postérieurs et moyens du cerveau bien développés, ceux-ci renflés considérablement aux parties latérales inférieures. . . . . Les squelettes auxquels appartenaient ces têtes accusaient, d'après les dimensions de leurs os, une taille moyenne de 5 pieds 2 pouces."

14. *Skull from Meloisy (Côte d'Or). Region of the* Ædui.—I have not seen this skull, which is in the collection of the Society of Anthropology. It is from a dolmen, "of the stone age," at Meloisy, in the department of Côte d'Or, which has been excavated by MM. de Saulcy and Bertrand. For the measurements of this ovoid skull, I am indebted to M. Broca.

15. *Skulls from Avignon? (Vaucluse). Region of the* Cavares. —Casts of two skulls, Nos. 173 and 174, are in the Museum. All that is recorded of them, in addition to their having been obtained from the museum of Avignon, is comprised in the following words:—"*Crâne d'ancien Gaulois venant d'un Tombeau qui contenait les Lances.*" By "*Lances,*" metal weapons, probably of bronze, are supposed to be intended. The first, No. 173, is quite brachycephalous (·84), and presents some parieto-occipital flatness; whilst the other is quite dolichocephalous, ·70; the difference being similar to that between the skulls from the round, and those from the long barrows of this country. Here, as in so many other instances in France, the two types seem to have been mixed in the same tomb.

16. *Skulls from the Cave of Lombrive (Ariège). Region of the* Consoranes.—Through the courtesy of M. le Docteur

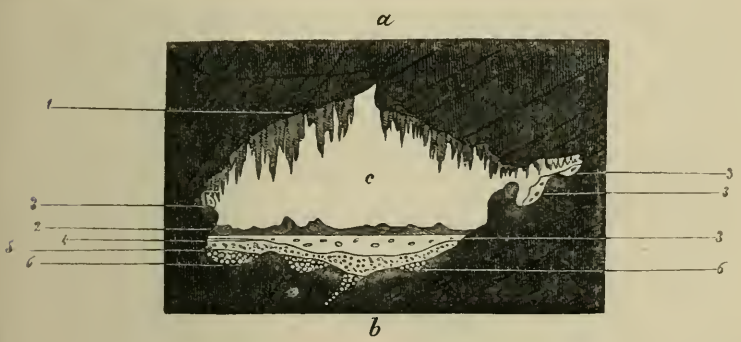

Fig. 19. *Cave of Lombrive, Ariège.*

Broca, I was shown two skulls, obtained from the cave of Lombrive, in the Pyrenees, by M. Garrigou. They were associated

and mixed with the bones of the reindeer, the aurochs and a bear resembling the brown bear, and those of other carnivorous and herbivorous animals. The teeth of a dog, perforated at

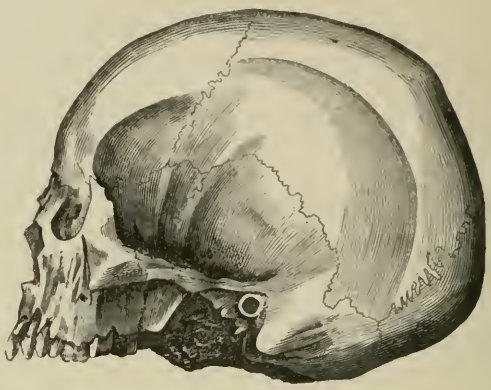

Fig. 20. *Skull from Cave at Lombrive.*

the roots, as if to be worn for an amulet or trophy, are the only traces of man's art which appear to have been met with.

Fig. 21. *Vertical View of the same skull.*

Adhering to the skulls is a quantity of bone breccia. One is that of an adult, supposed by Prof. Carl Vogt, by whom the

cave and skulls are minutely described,* to be that of a woman, the other appears to be that of a boy of about nine years. Both are clearly of brachycephalous type, though the relative breadth of that of the adult (·78, "77·7," *Vogt*), is less than that of the child (·82). Both present considerable parieto-occipital flatness. The great value and interest of these skulls must on all hands be admitted, as so clearly belonging to the *reindeer period*. There is nothing in their form to lead us to distinguish them from the skulls of brachycephalous or sub-brachycephalous type found in ancient Gaulish tombs, and in the circular barrows of the ancient Britons. Great, however, as is their probable antiquity, they belong to a period when, as Vogt observes, the cave-bear and cave hyæna had disappeared; whilst the form of the skull is totally different from the dolichocephalous form found in the Belgic-Rhenish caves. "Long periods of time," continues Prof. Vogt, "must have elapsed between the epoch when the men of Engis and the Neanderthal fought with the cave-bear, and that when the men of Lombrive hunted the reindeer. On the other hand, it is scarcely to be credited that any such period would have sufficed to produce so essential a variety in the race as the character of the skulls from the two classes of caves appears to indicate."

17. *Skulls from the Cave of Bruniquel* (*Tarn-et-Garonne*). *Region of the* Tectosages.—In the large collection of remains from the cave of Bruniquel, now in the British Museum, with the bones of the rein-deer and other animals, and with implements and weapons of bone, horn and flint, are two imperfect calvaria, and fragments of human skulls imbedded in hard breccia. One appears to be part of the skull of a man, and to be brachycephalous; the other, which is less imperfect, to be that of a woman, and rather to approach the dolichocephalous form. M. Garrigou was of opinion that a lower

* *Vorlesungen über den Menschen*, 1863. Band ii, pp. 26, 168; English translation, pp. 249, 379; whence the woodcuts of the cave and principal skull are taken. See also *Bull. de la Soc. d'Anthrop.*, t. iv, pp. 174, 583; t. v. The two skulls have been recently added to the collection of the Anthropological Society of Paris.

jaw, which he extracted from this cavern, was that of a brachycephalous person of short stature.* Among the fragments at the British Museum, are portions of a skull, stained of a deep chocolate colour, and in places almost black, and which likewise bear marks of having been violently cleft and perforated at or before death (Nos. 38309, 38311). The appearance of these fragments, like others from the chambered long barrows of England, seems, I think, to warrant the idea of human sacrifices and anthropophagism.

18. *Skulls from Genthod (Geneva). Region of the* Helvetii. —These three skulls are in the possession of M. Pruner-Bey, by whose kindness I have examined them. Beautiful casts of them have been presented to the Museum of Natural History, where they are numbered 2301^1, 2303^2 and 2305^3; the lower jaws bearing the intermediate numbers, 2302, 2304 and 2306. The following note accompanied the casts:—"*Ces trois crânes sont les types des habitants primitifs de l'Europe occidental. Ils ont été trouvés dans les cercueils en pierre sur une colline de gravier* [fifty feet in height], *près de Genthod, aux environs de Genève.*" A rude buckle and lance-head of iron were found in the tumulus, but whether in one of the kists, or nearer to the surface of the mound, I did not learn.† The skulls are of great interest. No. 2301^1 and 2305^3, both apparently of men, resemble the skulls from the round barrows; whilst 2303^2, that of a woman, resembles the skulls from the long barrows of this country. No. 2305 is a quite characteristic, brachycephalous (·81), and somewhat elevated skull. The supraciliaries are very prominent, but the occiput is not so flat as often seen in this class. No. 2301, though of the relative breadth of ·75, and therefore ovoid, is evidently only an aberrant example of the same brachycephalous type as the former.

* *Bull. de la Soc. d'Anthrop.*, t. iv, p. 651. Professor Owen's description of the human remains from the Bruniquel cave, read to the Royal Society in June 1864, has not yet been published; so that I have been unable to profit by more than a brief report of it. *Anthropol. Review*, vol. ii, p. 226.

† I have not seen M. Pruner-Bey's volume in 4to, entitled *Der Mensch im Raume und in der Zeit*, published at Munich in 1859, in the Appendix to which is a notice of these skulls.

This is shown by its facial characters, its very prominent and projecting supraciliaries, its large and quite prognathic, deeply-indented upper maxillæ. The mandible is likewise large, and the teeth of full size, are worn and deeply jagged. The frontal is very retrocedent, and the parietals slope off rapidly towards the sides. On the other hand, there is great breadth in the intermastoid diameter, and considerable parietal flatness, —characters of the brachycephalous type both in ancient Gaulish and ancient British skulls. No. 2303 is of the lengthened oval or ellipsoid form (·72), with great resemblance to the skulls of our British dolichocephali. It is smooth and well rounded, with the occiput full and prominent. The greatest breadth is in the situation of the parietal tubers. The supraciliaries hardly at all project; there is no depression at the roots of the prominent nasals; the maxillæ and mandible are small; the teeth flatly eroded.

M. Pruner-Bey being of opinion that the difference in the type of these skulls is proof of the mixture of a "Celtic" and "pre-Celtic" race, directed the casts to be labelled in accordance with this view. Believing the brachycephalous skull, No. 2305^3, to be pre-Celtic, the label intended for it was "*Crâne arrondi* (*Ibérien, Basque*), *orthognathe.*" The dolichocephalous skull, 2303^2, being, as he thought, Celtic, the label was to have been, "*Crâne, légèrement allongé* (*Celtique*), *légèrement prognathe.*" The other, of intermediate form, he concluded was of mixed race, and its label should have been "*Crâne arrondi, légèrement prognathe* (*Métis ?*) It seems objectionable to attach hypothetical designations to objects of natural history; but in this instance the mischief was exaggerated by the error of an assistant in the Museum, by whom these labels and designations on the skulls and in the catalogue were, in each case, applied to the wrong object, so that the meaning and intention were entirely obscured and lost.*

These are all the skulls, more or less certainly ancient Gaulish which I met with in the museums and collections of

* See the discussion on these casts. *Bull. de la Soc. d'Anthrop.*, t. v, pp. 295, 417, 432, 688, 1864.

Paris. There are a few so designated, which being, without histories known to me, I have not included in the table. Such is No. 329, entered in the catalogue as "*Homo Gallus Antiquus, Departement de l'Ariège, crâne donné par M. l'Abbé Siere, curé de la cathédrale de Foix,* 1852." It is the sub-brachycephalous skull of a man, of about the relative breadth of ·78; the large teeth are much eroded. Another is No. 2344, "*Tête trouvé en* 1858, *dans un Cimitière Gaulois de la Sablonière Villiers, sous St. Leu (près de Prescy sur Oise* (Oise.) *Donné par M. Houbigant, de Nogent les Vierges, près Creil.*" Though brachycephalous, this skull has a very modern air, and the teeth are not at all eroded. A doubt may be permitted, whether the cemetery from which it was derived was ancient Gaulish. Another is 2997, entered in the catalogue as "*Crane ancien incomplet. Donné par M. Charma en* 1863." It is the calvarium of a woman without the frontal, and is very brachycephalous. What claim the skull 2996, in the same case with the last, and with that from Fontenay, No. 2998, has to be regarded as Gaulish, I am ignorant. It is labelled "*Tête provenant des Sepultures Gauloises de Jort* (*Calvados*); *Donné en* 1863 *par M. le Docteur le Grand.*" It is a most remarkable specimen of what, in his Catalogue of Skulls, Dr. Barnard Davis has termed *cylindrocephalism*. It is very abnormally elongate, narrow, and depressed, with the relative breadth as low as ·63. Having been washed, as would appear with strong size, before being cleansed, the condition of the sutures is hardly to be distinguished. A specimen closely resembling it, obtained from the catacombs of Paris, by Professor Blandin, was presented to the Society of Anthropology at the meeting of July 7, 1864,* a day or two before I examined this at the museum.

Though the measurements of sixty-one ancient Gaulish skulls are given in the table, additional materials are still much to be desired; and it is to be hoped that many opportu-

* *Bull. de la Soc. d'Anthrop.*, t. v, p. 540. This skull is not quite so elongate as that from Jort; it has a relative breadth of ·68. It is, however, more depressed, and has the height in the proportion of only ·60, to the length taken as 1·00.

nities will be found by French anthropologists for adding to their number. It may be observed, that considerably more than half of the skulls which I have described and measured, viz., thirty-eight of the sixty-one, are from the one Department of the Oise, and from tombs within a very few miles of each other, though perhaps within the limits of three of the ancient Belgic tribes,—the Bellovaci, Silvanectes, and Suessiones. A great majority have been derived from dolmens or sepulchral caves and galleries, supposed to be of "*the age of stone.*" Very few indeed, if any, are from round barrows, such as in England, on good evidence, we assign to the *age of bronze*, and to that of *bronze and iron transition*. Of barrows of this sort, which are no doubt common enough in France, we ought to know more; and it is very desirable they should be systematically explored, in the interests both of anthropology and archæology. Could not a union for such a purpose be effected between societies devoted to these two sciences? May it not also be hoped that the inquiries and surveys—which it is understood have been made throughout France by order of the Emperor, in connexion with his *History of Julius Cæsar*—have resulted, among other things, in directing fresh attention to groups of circular and conoid barrows situated on waste and elevated plains, which might yield a rich harvest on being properly excavated? Barrows of this description should be searched for, especially in the Departments of Loire and Eure et Loire, on or near the *plateau d'Orléans*, between Orleans and Chartres. Somewhere in this district, most likely, was the celebrated *locus consecratus*, where, as Cæsar tells us, the people assembled once a year, from every part of Gaul, to meet the Druids, who decided disputes and administered justice on the spot. Around this sacred place, devoted both to law and religion, were no doubt the graves and barrows of the distinguished dead; just as in England, these are found so numerously scattered around Avebury and Stonehenge, which last, it may be concluded, was the *locus consecratus* of the later Belgæ, and the former that of the more primeval Dobunian and allied tribes.

Not only is it desirable to search for the skulls of the later Gauls, of the *bronze* and *iron periods*, in the circular barrows

which have been referred to ;* but dolmens and chambered long barrows, sepulchral galleries, caves, and grottoes, should be explored in Brittany, and in the western, central, and southern departments, for the osseous remains of the people of the *stone age*. It is scarcely to be doubted that in the Departments of the Pyrenees, Landes, and Gironde, such tombs exist, in which, as well as in circular barrows in the same district, the remains of the ancient Aquitanian tribes may be found. The examination of crania from the ancient graves of this part of France would almost certainly decide the true skull-form of the old Iberians, and with that many controverted questions in the anthropology of Gaul and of the whole of western Europe.†

So far as our knowledge of the skull-forms of the people of ancient Gaul extends, the table before us (Table IV), shows a mixture, in the same tomb, of the long and short types, such as certainly does not occur in the ancient British barrows of England. Conclusive proof of priority, in the order of succession, of a dolichocephalous race, has not yet been obtained for Gaul. On the contrary, two races—one dolichocephalous, the other brachycephalous—appear to have come into contact in that country at a very early epoch; and apparently even during the later *stone period* were more or less mixed and blended.‡ Which of the two first occupied the soil of Gaul, further researches must determine, though the presumption is in favour of its having been the dolichocephalous, as was clearly the case in Britain.

* Those who excavate these round barrows in search of skeletons, must be prepared for many disappointments. Cremation was the fashionable but not uniform accompaniment of burial in the bronze and iron periods, both in Gaul and Britain. In the south of England, several barrows may be opened in succession before finding a single unburnt skeleton. The excavations in ancient British barrow ssubstantiate the views of M. Leguay, as to the simultaneous practice of cremation and simple sepulture, in those of Gaul. *Bull. de la Soc. d'Anthrop.*, t. v, p. 318.

† Most important aid may be rendered in the prosecution of this object by the Society of Anthropology of Madrid, which has been lately founded under the presidency of M. Velasco.

‡ In this conclusion I am happy to find myself in accord with M. Broca. *Bull. de la Soc. d'Anthrop.*, t. v, p. 561. "Nos musées, quoique pauvres sous ce rapport, renferment cependant déjà la preuve que, pendant toute l'ère celtique, la population de la France se composait à la fois de brachycéphales et de dolichocéphales."

The table of measurements shows an average relative breadth such as might have been expected, with a mixture of skulls of dolichocephalous and brachycephalous proportions in the same series. The *cephalic index* stands at ·78 for the skulls regarded as those of men, and at ·75 for those of women. This difference not only accords with the rule of the female skull being usually of a longer oval form than the male,* but may possibly imply that the brachycephalous people were the intruders, who obtained for themselves wives among the more ancient dolichocephalous population. This may be the more probable from finding that the difference in the mean relative breadth in the two sexes depends much more on a difference in the proportion in which skulls of dolichocephalous and brachycephalous type enter into the two series, than on the greater dolichocephalism or brachycephalism of the individual skulls.

Ancient Gaulish Skulls.			Men.		Women.		Both Sexes.	
I.	Dolichocephali.	(·69—·71)	5	·14	3	·12	8	·13
	Sub-dolichocephali.	(·72—·73)	..	..	10	·40	10	·163
II.	Orthocephali.	(·74—·76)	9	·25	3	·12	12	·20
	Sub-brachycephali.	(·77—·79)	5	·14	5	·20	10	·163
III.	Brachycephali.	(·80—·86)	17	·47	4	·16	21	·343
			36	1·00	25	1·00	61	1·00

Thus, of the thirty-six male skulls, twenty-four or two-thirds, are, according to the method explained above (p. 461), brachycephalous or sub-brachycephalous; whilst of the twenty-five female skulls, nine or about one-third only, are to be so classed. On the other hand, of the male skulls, five or one-seventh only, are dolichocephalous; whilst of the female, thirteen or as many as one-half, fall under this category. This is shown by the above analysis; to which columns, showing the relative proportions per cent., have been added.

* "The male skull is separated by typical differences from the female, in a higher degree than many so-called typical forms differ from the normal, or than many race-skulls differ from each other. Mean numbers, as hitherto deduced from skulls of different sexes, are of very limited value. . . . . The female skull is not only smaller, but is in a higher degree dolichocephalous and prognathic than the male." (Welcker, *Wachsthum und Bau.*, p. 141.) "Between the two sexes of the same species differences may and do exist, greater than between the same sexes of different species.—I shall keep to the male sex." (Vogt, *Vorlesungen*, b. i, s. 226.)

Table IV.—*Ancient Scandinavian Skulls.*—These skulls, and the megalithic or "Giants' chambers" whence they were obtained, have been briefly described, at p. 129 *ante*. The chambers have a considerable resemblance to many of those in the south-west of England; and like them appear to be of the *stone age;* as, so far as known, no objects of metal have in any instance been found in them. The skulls derived from them are not, as in this country, of exclusively elongate type, but have a preponderating brachycephalous character; though, as in the dolmens and sepulchral chambers hitherto examined in France, there is an admixture of the two types. The dolichocephalous intermingling, however (as will appear on a comparison of Tables III and IV), is much less considerable. These ancient Scandinavian skulls are known to us in this country through sketches and measurements taken by Mr. Busk, which he communicated to Professor Vogt; and also by the extensive series of measurements by Dr. Barnard Davis, given in *Crania Britannica*.* This table comprises forty-six skulls; thirty-three of which are regarded as those of men, and thirteen as those of women. Some are from Sweden; a few from tombs the nature of which is not stated; and three are from peat mosses.

In my abbreviated table, I have confined myself to twenty-eight skulls from well-known stone-chambers in the Danish islands of Falster and Möen. That of Borreby in Falster, which contained "only stone implements," and had a gallery measuring twenty-seven feet in length, afforded the remains of sixty-two bodies. The thigh-bone of one measured 22·3 inches, or about 566 millimeters, indicating a man of great stature. These ancient brachycephali, like those of the British bronze period, seem to have been by no means a stunted race like the Lapps. The form of one of the large series of skulls, No. II, is well known from the comparison instituted by Mr. Busk and Professor Huxley, between it and the celebrated Neander-

* Vogt, *Vorlesungen*, 1863, b. ii, s. 117, 160, 172, English ed., pp. 337, 372, 384. *Cran. Brit.*, pp. 225, 229, Table III, 246.

thal skull.* Of another, No. IV, casts have been taken, one of which I have examined in the Museum of Anatomy at Oxford. The small isle of Möen seems to abound with these large chambered tombs. It is nearly thirty years since two of these at Byen, near Stege, were opened by M. Hage, and yielded five skulls, which are in the University Museum at Copenhagen. One of the number was particularly described by Professor Eschricht,† by whom a cast was presented to the Museum of the College of Surgeons.‡ The three skulls from the Udby chamber are, with those from Borreby, in the Museum of Northern Antiquaries at Copenhagen. With the skeletons "only stone and bone implements were found." A cast of the first of these skulls (No. 14 of Table IV) may be seen in the Museum at Oxford. To the measurements of the skulls already named, I add those of one other from a chambered barrow at Magleby, also in the isle of Möen, which has been explored by M. Boye.§ In the stone chamber, which was about sixteen feet in length and five in height, and had an opening to the east, were the remains of many bodies, which had been deposited in the sitting posture around the walls; and, with them, as many as fourteen beautifully made stone axes, wedges, chisels and spear-heads, more than sixty flint flakes, a few amber beads, and some fragments of pottery. The stone implements and one of the skulls are in the collection of Mr. J. Lubbock, F.R.S., to whose kindness I am indebted for these particulars.

The much smaller number of dolichocephalous skulls mixed with those of the prevailing brachycephalous type, as compared with those found in the ancient Gaulish tombs, will appear on a comparison of the following analysis with that given on p. 507. Whilst in the latter only about half are brachycephalous or

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* Lyell, *Antiquity of Man*, p. 86, fig. 5, 1863. Huxley, *Man's Place in Nature*, p. 158, 1863.

† *Dansk Folkeblad*, No. 28, p. 109, Sept. 1837; see translation by Prichard, *Researches*, vol. iii, p. xvii.

‡ It is No. 5710, and has been already referred to in connexion with the Gaulish skull from Marly, *ante*, p. 496.

§ *Annaler for Nordisk Oldkyndighed*, p. 202, 1858. Lubbock, *Prehistoric Archæology*, p. 99.

sub-brachycephalous, in the Scandinavian skulls of the stone age three-fourths are of these proportions. Not a single skull is absolutely dolichocephalous, whilst thirteen per cent. are so in the Gaulish table. Only three, or 10·7 per cent., are sub-dolichocephalous, to set against the 29·3 per cent. in these two categories in the table of Gaulish skulls.*

Ancient Scandinavian Skulls.		Men.		Women.		Both Sexes.	
I. Dolichocephali.	(·69—·71)	..	..	..	..	..	..
Sub-dolichocephali.	(·72—·73)	2	·10	1	·125	3	·107
II. Orthocephali.	(·74—·76)	3	·15	1	·125	4	·143
Sub-brachycephali.	(·77—·79)	6	·30	2	·25	8	·286
III. Brachycephali.	(·80—·86)	9	·45	4	·50	13	·464
		20	1·00	8	1·00	28	1·00

The ancient Scandinavian skulls are smaller than those of the ancient Britons of the round barrows; with the measurements of which, in the the second division of Table I, they may, notwithstanding, be compared, as having a great general correspondence with them. The Borreby skulls are, however, decidedly larger than those from the chambers in the Isle of Möen, which are unusually small. There is a difference of seven-tenths of an inch, or seventeen millimeters, in the average circumference of the thirteen skulls of men from Borreby, and that of the seven from Möen. The ruggedness and massiveness of the facial characters correspond very much with those of our British round-barrow type. The strongly marked supraciliary ridges in the Borreby skull, No. II, almost rival those in the skulls from Acklam, Ballidon Moor, and Kennet Hill.† This last, moreover, in the flatness of its frontal, approaches to the platycephalism which induced Mr. Busk and Professor Huxley to compare the Borreby skull with that of Neanderthal. The deep naso-frontal notch, the length

* The result would be nearly identical if the larger series, given in Table III of *Crania Britannica*, were analysed. It may be observed, that the measurements of the Borreby skulls, which Mr. Busk has been good enough to show me, give, in several instances, a somewhat more brachycephalous proportion than do those of Dr. Barnard Davis. According to both, however, it results that out of thirteen skulls of men, there are seven with a relative breadth of ·80 and upwards. Comp. Vogt, b. ii, s. 174, Eng. ed., p. 385.

† *Cran. Brit.*, Plates IX, 31; XVII, 1; XXIII, 11.

of the superior maxillaries, and the tendency to prognathism which these ancient Scandinavian skulls exhibit,—all corre-

Fig. 22. *Skull from Stone-Chamber, Borreby.*

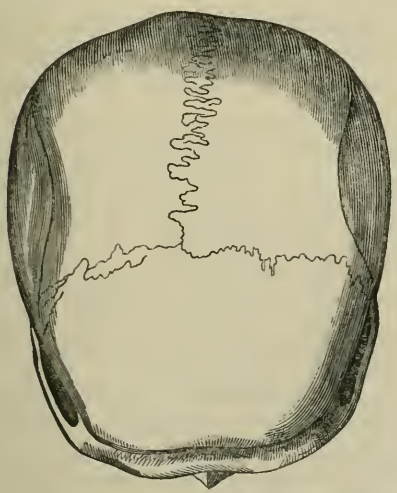

Fig. 23. *Vertical View of the same Skull.*

spond with what is seen in the ancient British brachycephalous

type. As Professor Vogt observes, in these last characters they differ entirely from the skulls of modern Lapps, who are strictly orthognathic. As regards facial characters, they correspond more with the skulls of true Finns,* which by their brachycephalous type and their rugged macrognathic characteristics, approach more closely to the ancient British type than perhaps any other class of skulls.† I must confess that the correspondence between the skull-form of the ancient brachycephalous Briton, Gaul and Scandinavian, and that of the modern Finn, so very much exceeds any differences which may be traced in them, that I should have no difficulty, on sufficient evidence, in admitting their common parentage and descent.

It is high time to draw to a conclusion this paper, already too much extended.‡ A few remarks will be allowed. The first point I regard as established has reference to an observation of Professor Von Baer, who, in one of his latest memoirs, observes, that the Neanderthal skull "might be taken for a Celtic or a Cimric one,§ though with a quite exceptionally strong development of the supraciliary arches and flatness of the forehead, until further proof be obtained of the existence of a European primeval people with long drawn out, and at the same time large skulls. . . . But until this proof be obtained, the brachycephalism which we find in the Basques, Rhætians, Lapps, etc., appears to me of all the quite ancient European head-forms, the only one fully proved."‖ The dolichocephalous skulls from the long barrows of Britain appear

* Vogt, b. ii, s. 119. Comp. p. 160, 172.

† The figure of the Finn skull (No. 1537 in the Morton collection) given by Dr. Meigs in Nott and Gliddon's *Indigenous Races*, p. 285, and in his *Catalogue of Human Crania*, and that given by Retzius (*Ethnologische Schriften*, Taf. iii, fig. 3), might well stand for those of ancient brachycephalous Britons. See Dr. D. Wilson's remarks on these Finnish skulls in his *Physical Characteristics of the Ancient and Modern Celt of Gaul and Britain; Canadian Journal*, Nov. 1864; *Anthrop. Review*, vol. iii, p. 78.

‡ I was the more anxious to express my views on the ancient British skull-forms from having had no adequate opportunity of doing so in the pages of *Crania Britannica*. It may have been as well, not to have combined in the same work views hardly, or not at all, capable of being reconciled.

§ *On an Ancient Skull from Mecklenburg*, quoted *ante*, p. 124, *note* †.

‖ This opinion is that entertained by M. Pruner-Bey, who designates it "the long-headed Celt of Neanderthal." *Bull. de la Soc. d'Anthrop.*, t. iv, p. 318. According to Prof. Huxley's measurements, this skull has a relative breadth of ·72; that of Engis, one of ·70. (*Man's Place*, p. 127, 142.)

to me to afford the proof required by the venerable northern Professor. Ten years ago, when, in conjunction with a friend, I reopened the chambered long barrow of Uley, the evidence in favour of a primitive dolichocephalous people in Britain was of the most meagre and inadequate description.* But since then, the number of long barrows which from time to time have been opened by myself and others, and all of which have yielded skeletons with "*long drawn out skulls,*" has been so great that it is hardly possible to resist the conclusions obviously to be deduced from them. It would not be safe to attach any great importance to a coincidence of form with any single example, however remarkable or celebrated. It may, however, be observed, that our dolichocephalous British skulls have not only the elongate proportions of the Neanderthal calvarium, but that many of them have its other characteristic of a low and more or less depressed forehead. It was this character which, in the second decennium of the century, attracted the attention of Sir Richard Hoare in two or three skulls found by him in the chambered barrow at Stoney Littleton, Somersetshire. These skulls "appeared to him to be totally different in their formation from any others which his researches (viz., in the round barrows) had led him to examine: being '*fronte valde depressa.*' "†

In the first part of this paper, written more than a year since, I occasionally use the terms *Celtic* and *pre-Celtic*,—the former as applicable to the brachycephalous *skulls* of the ancient Britons of the round barrows, who, on historical and linguistic evidence, were inferred to be Celtic; and the

* As regards the long barrows, we then had, in the Museum of Guy's Hospital, the two long skulls obtained from Uley some years previously, and a few skulls in the Bateman collection, from barrows, the form of which was not very clearly described. There were also the skulls from Scotland, adduced by Dr. D. Wilson in 1851; as to which, however, writing in 1856 (*Cran. Brit.*, p. 55), I was constrained to observe, that "the data seemed altogether inadequate to the conclusions, even suggestively deduced from them."

† *Archæologia*, vol. xix, p. 47, 1819. I succeeded in finding the fragments of the skulls referred to by Sir Richard Hoare, in the Museum of the Philosophical Institution at Bristol, and I have briefly described them, *Cran. Brit.*, Pl. xxiv, 5; p. (6).

latter as applicable to the dolichocephalous skulls from the long barrows of the stone period, who, it was suggested, might be of Iberian origin. The repeated discussions which, during upwards of a year, have taken place in the meetings of the Society of Anthropology of Paris,* have convinced me that it is desirable, as referring to craniology, to discontinue the use of these designations. The hope of any agreement as to a true Celtic skull-form seems more distant than it was fifteen years ago, when the now venerable Professor Nilsson assured me that "nothing was more uncertain and vague than the denomination *Celtic cranium*, for hardly two authors have the same opinion in the matter."† I have been accustomed to regard it as definitely proved, by the researches of late years, that the true skull-form of the bronze and iron age in Britain, and inferentially in Gaul, was brachycephalous, and was that of the Celts of the historical period. I further concluded, that the question as to "the form of the Celtic skull," which I propounded for examination many years ago,‡ was satisfactorily disposed of. But the opinion, largely diffused through the writings of Retzius, and which still finds an ardent advocate in M. Pruner-Bey, and a more cautious supporter in Professor von Bäer, is no doubt in favour of the Celtic skull being ovoid or dolichocephalous. I believe, however, we may ask in vain for a series of ancient dolichocephalic skulls from tombs which, on satisfactory archæological grounds, can be assigned to the immediately pre-Roman, and therefore to the Celtic period, either in England or in France.§

When, again, we examine the existing populations who speak Celtic dialects, and may be regarded as the representatives, no

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* *Bull. de la Soc. d'Anthrop.*, t. iv and v, *passim*. The various and distinct significations given to the term are defined by M. P. Broca, as 1, the Historical; 2, the Linguistic; 3, the Archæological; and 4, the Craniological. *Ibid.*, v, p. 457.

† *Cran. Brit.*, p. 17. See the observations of Professor Ecker, *Crania Germaniæ*, p. 11, 1863.

‡ *Ibid.*, p. 55. In this passage, written more than eight years since, I expressed the method in which my researches had long been conducted.

§ An Aryan, or so-called Indo-European immigration from central Asia into Europe, must still be regarded as a hypothesis. So far as I am aware, no sufficient proof has yet been obtained from the remains in tombs, of the advent in great numbers of such a people, having the orthocephalic or ovoid skull-form, which is assumed by those who advocate this hypothesis.

doubt more or less mixed, of the ancient so-called Celts, we find a great diversity. In western Ireland, where the Gaelic-speaking people are presumed to exist in the greatest purity, the observations of Sir W. R. Wilde* and Dr. J. Barnard Davis† concur in representing the skull-form as dolichocephalous; to which the latter adds, that it is somewhat low and depressed. In Wales, the modern representatives of the Cymric-speaking Britons have skulls with "an inclination to brachycephalism," and "a great resemblance to the crania of the ancient Britons."‡ It appears to me to be worthy of inquiry, whether these two peoples are not, in truth, the descendants and representatives, the latter of the people of the Round, the former, of those of the Long barrows. Such a duality would harmonise with that of the same peoples, founded on linguistic considerations and on the etymology of topographic names, formerly advocated by Edward Lhuyd, and which has recently found an able defender in Sir Gardner Wilkinson.§ In Brittany, the Cymric-speaking people of France, appear to possess a skull-form which, like that of the Welsh, inclines to brachycephalism.

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* *Ethnology of the Ancient Irish.*

† *Cran. Brit.*, p. 200. It may be worthy of notice, that the long and depressed skulls which have been found by Professor Vogt in the Canton of Berne,—one of which he compares to that from Neanderthal,—are by him traced to Ireland, and to the Christian missionaries from that country. There seems to be some doubt as to this attribution; and we may in any case demur to the fanciful name of "Apostle skulls," by which Prof. Vogt designates them. *Vorlesungen*, Eng. ed., pp. 299, 306, 375.

‡ *Ibid.*, pp. 204, 205. An excellent observer, Dr. Arthur Mitchell, distinguishes two types in the highlands of Scotland, which it might be easy to reconcile with the view suggested in the text. Without quoting all the characteristics, it may be observed, that the head of the one is described as "rather round and short;" and that of the other as "longish, not broad, with prominent occipital region." This last type is designated by Captain Thomas as that of "the Spanish Celt." *Ibid.*, p. 210.

§ *Ibid.*, pp. 137-140. If the ancient Gaulish language should turn out to be more nearly represented by the modern Irish or Gaëlic, than by the Welsh or Cymric, as contrary to the general opinion has been thought by Grimm and Pictet, and more recently by Mr. D. W. Nash (*Philol. Soc.*, Feb. 17, 1865), it might, perhaps, be more easy to connect the modern Irish physical type with that of the ancient Iberians, through an early so-called pre-Celtic type from Gaul; supposing both of the last to have been dolichocephalous. After all, we must remember with Humboldt, that "languages give but feeble probabilities in Anthropology." As M. Pouchet observes, "The unity of a family of languages is not always sufficient to establish that the people who speak these idioms are of one and the same origin; we can only conclude from it that they have been in relation one with the other." *Plurality*, etc., Eng. ed., p. 144.

Such, at least, is the type of one series of Breton skulls, in the Museum of Natural History of France (*Salle Cuvier*); though in another series, more recently added, the form is more ovoid.* In both the facial characters are massive and rugged, like those of the British brachycephali; they are likewise macrognathic, with a slight tendency to prognathism.

As, then, the skulls of the modern Celtic-speaking peoples, as well as those from two classes of ancient British tombs, present two distinct types, it is difficult to justify any longer the use of the term *Celtic skull;* which conveys no distinct idea, unless when accompanied by a definition, which will always be liable to vary with the individual by whom it is employed. In place of this vague term, it would be better to speak of the skulls of the Bretons and the Welsh, of the Irish and the Scottish Highlanders, as the case may be; or if we are dealing with ancient skulls, to designate them as of the stone, bronze, or iron age; from round, or from long barrows; from dolmens, cromlechs, or cists, with such geographical indication,—from Gaul, Britain or Ireland,—as may be required in each instance.

In Britain we have proof, I think, of a succession of two distinct primitive races in pre-Roman times,—the dolichocephalous being the earliest of the two; but as to France, we may say—"the further we go back, the greater is the contrast between individual types, the more opposed are the characters, —the most decided long-heads immediately by the side of the most decided short-heads."† The writer, however, of these words uses them, not of the historic or immediately pre-historic times, or of the men whose bones are found in dolmens and barrows; but of a different geological period, and of the

* Even of this series, claimed as dolichocephalous by M. Pruner-Bey (*Bull. de la Soc. d'Anthrop.*, t. v, p. 111, Tab. 2*me, note* 1), the mean relative breadth assigned by that eminent craniologist to eleven skulls is ·776, which is a sub-brachycephalous proportion. To obtain even this figure, the more brachycephalous skulls were rejected.

† Vogt, *loc. cit.*, b. ii, s. 285. These words are used by their author in a general sense. Above, I have applied them especially to France, and to the comparatively modern period of the dolmens and sepulchral chambers.

osseous human remains found in caverns, which of late years have attracted so much attention. Only a few weeks since, in a small cave, of the *rein-deer* period, at Furfooz, near Dinant in Belgium, MM. Van Beneden and Dupont have found two very perfect skulls, which we were told are of "two distinct races." One of these skulls was stated to be "decidedly brachycephalous and prognathous";* from which it might have been inferred that the other was dolichocephalous, like that from the Engis cavern near Liege. Such, however, is by no means the case, as shown by the more complete description and figures which have since been published.† The difference which the two skulls present is by no means incompatible with their being of one and the same race. One, perhaps that of a woman, is decidedly prognathous, and also considerably more elevated, and of somewhat squarer form than the other. They appear, however, to be equally brachycephalous, having a relative breadth of upwards of ·80.

The continental anthropologists appear disposed to assign a dolichocephalous type of man to the earliest geological epoch with which human remains have yet been connected,—that called the *post-glacial period*, in the caverns of which are found the remains of the great extinct pachyderms and cave-bear.‡ To this epoch are referred the skulls of Neanderthal

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* Letter of M. Van Beneden to Mr. J. Lubbock, F.R.S., *The Reader*, Jan. 7, 1865.

† *Les Ossements Humains du Trou du Frontal*, par M. P. J. Van Beneden et M. Ed. Dupont. *Bull. de l'Acad. Roy. de Belg.*, 2 *sér.*, *t.* xix, *No.* 1, p. 29, Pl. I, II. Though these skulls cannot be accepted as belonging to two races, all praise must be conceded to these worthy representatives of a Schmerling, for the careful details with which the narrative of their discovery is accompanied, and for the cautious spirit in which it is framed. "Pour le moment," say they, "nous l'avouons franchement, ce n'est pas une lumière que nous apportons pour éclaircir l'histoire des premiers habitants de notre sol; c'est, au contraire, un doute de plus que nous introduisons dans la science." The skulls were exhibited at the meeting of the Society of Anthropology of Paris, Feb. 23, 1865, and will, no doubt, be described in the *Bulletin* (t. vi) of that day's proceedings. With the human remains, and with those of the rein-deer and other animals, the only works of art found, consisted of chipped flints and of bone.

Further discoveries are at the present moment being made in the caves near Dinant. The skulls, said to resemble those from Borreby, exhumed at Furfooz, by J. Jones, Esq., F.G.S., on March 18th, are to be presented very shortly to the Anthropological Society of London, in connexion with a memoir on these caves by M. Alfred Becquet.

‡ *Bull. de la Soc. d'Anthrop.*, t. v, p. 416.

and Engis: the former, doubtless that of a man, the latter, supposed by Professor Vogt to be that of a woman of the same race. But with the deposits in the caverns of the *reindeer period* in the Pyrenees, and other parts of France, which are much more modern, and which contain the remains of a fauna by no means extinct, though no longer existing in this part of Europe, the case is said to be different. The more complete skulls hitherto obtained from these caverns, as for example, those from the cave of Lombrive, already described (p. 499, *ante*), are brachycephalous.* As Professor Vogt observes, "the skulls of Lombrive belong to a race differing entirely from that of the Belgic-Rhenish caves. All the characters are so opposed, that a descent of the Lombrive skulls from those of Engis, or any relationship even between them, cannot be thought of."†

The facts at present known, in connexion with this subject, appear altogether too few to warrant any certain deductions; such, for example, as those very lately propounded by Professor Spring of Liége.‡ A much greater number of these cave-skulls must be obtained under circumstances favourable for precise verification, before any such conclusions may safely be relied upon. Still, it is not a little interesting to find that modern scientific speculation and research tend towards the proof of the existence of two distinct races of men—the one with long, the other with short heads—from the very earliest

* So also are said to have been those found by Professor Spring in the cavern of Chauvaux in Belgium, though the published details are not very precisely given. (*Bull. de l'Acad. Roy. des Sc. Lett. et Arts de Belgique*, t. xx, 3, p. 427, 1853. Vogt, *loc. cit.*, p. 344. *Bull. de la Soc. d'Anthrop.*, t. v, pp. 263, 333.) As we have just seen, the two skulls from the Furfooz cave are also brachycephalous.

† Vogt, *loc. cit.*, b. ii, s. 171. In these early ages, it is maintained, that races existed as distinct in form as Negroes and Europeans are at present. Upon which Prof. Vogt observes, "that though the short-heads might be deduced from Asia, this could not apply to the narrow-heads, which claim the highest antiquity, as no such heads are there found" (p. 391).

I have referred freely to this work, which is one of great interest, but which it is much to be regretted is disfigured by cavillings on subjects usually held sacred from scorn, which have little real connexion with the questions under discussion, and must give just offence to a large class of readers.

‡ *Bull. de l'Acad. Belgique.* See abstract in *The Reader*, p. 227, February 25, 1865.

times, and since the last great geological revolution which affected the distribution of land and water in north-western Europe.

I conclude with an interrogation. Is it not probable that the long and short skulls found in the two classes of the most ancient tombs of England, which have occupied so much of our attention, are the direct and but slightly modified descendants of those truly primeval long-heads and short-heads whose remains, from time to time, are found in the bone-caves of western Europe, in England, Belgium, Germany, France, and the Spanish peninsula?

For a satisfactory answer, Time must be afforded; and, in words which were employed by the Father of Medicine with a different application, we may exclaim,—"Life is short, and art long, the occasion fleeting, and judgment difficult."

Appendix.*

On the Weight of the Brain and Capacity of the Cranial Cavity of a Negro. By Thomas B. Peacock, M.D., F.R.C.P., F.A.S.L.

In the present volume of *Memoirs*, I published a short paper on the weight of the brain in the Negro. On this occasion, I propose to report the particulars of the weight of the brain and capacity of the cranial cavity of another Negro, whose body I have had the opportunity of examining since that paper was written.

The case referred to is that of a man, who was supposed to be from twenty-five to thirty years of age. He stated that he was born in the interior of Africa, and taken as a boy by Portuguese slave dealers to Mozambique, whence he was carried to the Cape of Good Hope, and remained there some years. He had been in England, with the exception of the interval occupied by a voyage to the Cape, for about fourteen years. He was not very intelligent, and spoke English imperfectly. He did not know to what race he belonged; but he had the characteristic features of the Negro,—a narrow and retreating forehead, a projecting jaw, and woolly hair. He was small and spare, not more than 5 feet 4 or 5 inches high, and the weight of his body, after death, did not exceed six or seven stones.

His death was occasioned by phthisis and colliquative diarrhœa; and on examination, tuberculous deposits were found in the lungs and other organs, and there was much old and recent ulceration of the mucous membrane of the bowels. The weights of the different organs were as follows:—

Encephalon.	Cerebrum.	Cerebellum.	Pons & Medulla.	Heart.	Liver.	Spleen.
42 oz. 8 drs.	37 oz. 7 drs.	4 oz. 5 drs.	12 drs.	6 oz.	48 oz.	22 oz.

I.—1. On referring to the former paper, it will be seen that of four brains of Negroes of similar ages, the mean weight was 44 oz. 12 drms.; the heaviest weighed 46 oz. 2 drms.; the lightest, 43 oz. 8 drms.

The cerebrum in three cases weighed, on the average, 38 oz. 14·8 drms.; the heaviest being 40 oz. $\frac{1}{2}$ drm., the lightest 38 oz.

* See pages 65, 71.

The cerebellum had a mean weight of 6 oz. 7·5 drms.; the heaviest being 7 oz., the lightest, 6 oz. ½ drm. In the present instance, therefore, the weights of the brain and its several portions were less than in any other of the Negroes.

2. In the former paper, I compared the weights of the brain in the Negro and in persons residing in England and Scotland, and found that of 105 European males, at similar ages, the mean weight of the brain was 50 oz. 5·6 drms.; and the three heaviest weighed 62 oz. 8 drms., 62 oz., and 61 oz. 2 drms.; the three lightest weighed 38 oz., 40 oz. 8 drms., and 40 oz. 10 drms. The weight of the present Negro brain was, therefore, very considerably below the average weight of the brain of the European (7 oz. 7·5 drms.) The heaviest of the five Negro brains only weighed 46 oz. 2½ drms., and was therefore less by 4 oz. 3·1 drms. than the average of the European, though some of European brains were lighter than any of those of Negroes.

3. The proportion of the weight of the cerebellum, with the pons Varolii and medulla oblongata, to that of the cerebrum, was in this instance 1 to 8·39. In the four other Negroes, whose encephala were weighed, the proportion was 1 to 6·7 and 1 to 7·6. In European males, at similar ages, the proportion varied from 1 to 6 to 1 8·7. These calculations indicate that the relative size of the cerebellum and the cerebrum do not materially differ in the Negro and the European, and show, what is indeed obvious from the several weights, that the inferiority of weight in the Negro applies not only to the whole encephalon, but to its several portions.

II. The skull of this Negro is oval, measuring in its longitudinal diameter 6·9 inches, in its transverse, 5 inches. The breadth of the frontal region, measured from ridge to ridge about one inch above the naso-frontal suture, is 3·65 inches. The height of the vertex, measured from the external auditory foramen, is 6 inches. The circumference of the skull is 19 inches. The skull is light and thin, measuring at the line of section about two inches above the external auditory foramen, 2-10ths of an inch in thickness in front, and 1-10th at the

sides and back. The sutures are considerably obliterated. The coronal suture, in the upper part of its course, is somewhat indistinct, and is entirely gone at the sides. The sagittal suture exists in the portion of its course from the coronal to the vertex, but thence to the lambdoidal suture it is wholly obliterated. The lambdoidal and squamous sutures are less distinctly marked than usual. On the inner side of the calvaria, the sutures are entirely gone, and they only exist imperfectly at the base. The articulating processes of the occiput are single, and display no appearance of the ridges which indicate the point of union of the separate portions of the bone during fœtal life, and have been supposed to be characteristic of Negro skulls.

Professor Tiedemann, in his paper in the *Philosophical Transactions* (vol. xxviii, p. 497, 1836) stated, as the result of his researches into the weight and dimensions of the brain, and the weight of the cranial contents of dry skulls, that "the brain of the Negro is upon the whole quite as large as that of the European and other races;" and again, that "many anatomists have incorrectly asserted that Europeans have a larger brain than Negroes." It is not a little curious that Tiedemann should have arrived at this conclusion, for the data contained in his paper do not warrant it. The facts as to the weight and dimensions of the brain are too few to form a satisfactory basis for generalisation; and the capacity of the cranial cavity, as deduced by him from the weight of millet-seed which it is capable of containing, would lead to an opposite conclusion. This has before been pointed out by Van der Hoeven, and it is, indeed, obvious on even a cursory inspection of his figures. The results of Tiedemann's observations are as follows:—

	Oz. drms. grs.				Oz. drms. grs.				Oz. drms. gr.		
Caucasian race, mean wt.											
European ,, ,,	41	1	48·6	greatest	57	3	56	least	32	6	0
Asiatic ,, ,,	36	4	28	,,	41	5	56	,,	27	6	30
Negro ,, ,,	37	3	51·5	,,	54	2	33	,,	31	5	6
Mongolian ,, ,,	38	10	22·5	,,	49	1	22	,,	25	0	18
Malayan ,, ,,	39	7	18·9	,,	49	1	45	,,	30	5	0
American ,, ,,	39	2	48	,,	59	0	0	,,	26	1	44

The inference deducible from the observations would, therefore, appear to be, that the capacity of the Negro skull is, on the average, less than that of the European, but greater than the Asiatic and Malayan. It also appears that some Negro crania are more capacious than those of some Europeans. These conclusions accord in general with those deduced by Morton from a much larger series of observations.*

With the object of comparing the capacity of the Negro skull, which is the subject of this notice, with the crania of other races, I have weighed the quantity of millet-seed capable of being contained in the cavities of all the skulls, of ascertained race, in the museum of St. Thomas's Hospital, excluding however, all such as were obviously congenitally malformed, and the skulls of females. I have also estimated the capacity of the same in cubic inches and cubic centimetres, by measuring the quantities of millet-seed contained. The results are as follows:—

Race.	No. of Crania.	Mean weight of Millet seed.	Greatest Weight.	Least Weight.
Europeans	16	40 oz. 2·6 drs.	44 oz. 6 drs.	36 oz. 0 drs.
Capacity in cubic inches .		89	97·25	79·75
„ in cubic centimetres		1465	1620	1310
Hindoo	1	36 oz. 11 drs.		
Capacity in cubic inches .		81·25		
„ in cubic centimetres		1335		
Negroes	9	35 oz. 12·2 drs.	39 oz. 4 drs.	34 oz. 12 drs.
Capacity in cubic inches .		79	87·5	75·5
„ in cubic centimetres		1295	1430	1240
New Hollanders	3	31 oz. 10 drs.	31 oz. 15 drs.	31 oz. 8 drs.
Capacity in cubic inches .		69·75	70·5	69·5
„ in cubic centimetres		1140	1150	1135
South Sea Islanders	2	32 oz. 14 drs.	33 oz. 12 drs.	32 oz.
Capacity in cubic inches .		73	74·5	70·5
„ in cubic centimetres		1195	1225	1155
Chinese	1	34 oz. 10 drs.		
Capacity in cubic inches .		75		
„ in cubic centimetres		1230		
Malayans	3	37 oz. 7 drs.	38 oz. 8 drs.	35 oz. 9 drs.
Capacity in cubic inches .		83·5	86	78·5
„ in cubic centimetres		1365	1405	1290
Americans	3	36 oz. 12·6 drs.	40 oz. 2 drs.	33 oz. 12 drs.
Capacity in cubic inches .		81·5	89	74·5
„ in cubic centimetres		1340	1465	1225

* *Trans. of the American Medical Association*, vol. iii, p. 57, Phil., 1850.

In the above table, the weight employed was avoirdupois, or imperial.*

It will be seen that in the crania measured, the European exceeded that of any other race, both in the mean and highest capacity; while the New Hollanders and South Sea Islanders stand in both respects the lowest in the series. If the single observation of the capacity of the cranial cavity of a Hindoo be omitted from consideration, the Negroes occupy the fourth place, the capacity of their crania being considerably exceeded in the mean and greatest weight and size by the Europeans, and to a less extent by the Malayans and Americans. It will, however, be further noticed, that some of the crania of Negro races exceeded in capacity some of those of Europeans.

The cranium of the Negro which is the subject of this paper, had the smallest capacity of any of those of the Negro race, being only capable of containing an amount of millet-seed weighing 34 oz. 12 drs., and occupying a space of 75·5 cubic inches, or of 1240 cubic centimetres.

It has been stated that in the skull of this Negro the articulating processes of the occiput are single, and not divided by the ridges, indicating the former line of separation of the portions of which the bone originally, or in the fœtal state, consisted, and which has been supposed to be characteristic of the Negro race. I have examined all the skulls in the museum of St. Thomas's Hospital in reference to this point, and do not find the ridges to exist in any of the Negro skulls; though they are very marked in a skull brought from Waterloo, and probably that of a person of Mongolian race, and are found, less decidedly, in other skulls of different races.

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* The weights in the calculations of Tiedemann are said to be given in Troy or Apothecary's Weight, the ounce being therefore of 480 grains, and the drachm of 60 grains. My own weights are Avoirdupois or Imperial, therefore the ounce contains 437·5 troy grains, and the drachm is equal to 27·3 troy grains. If the weights be reduced to the same standard, Tiedemann's estimates uniformly exceed my own, and this, too, in cases in which the contents of the same crania were weighed. I employed millet seed for comparison between my observations and those of Tiedemann; had sand been used, the capacity would have been somewhat less by measurement.

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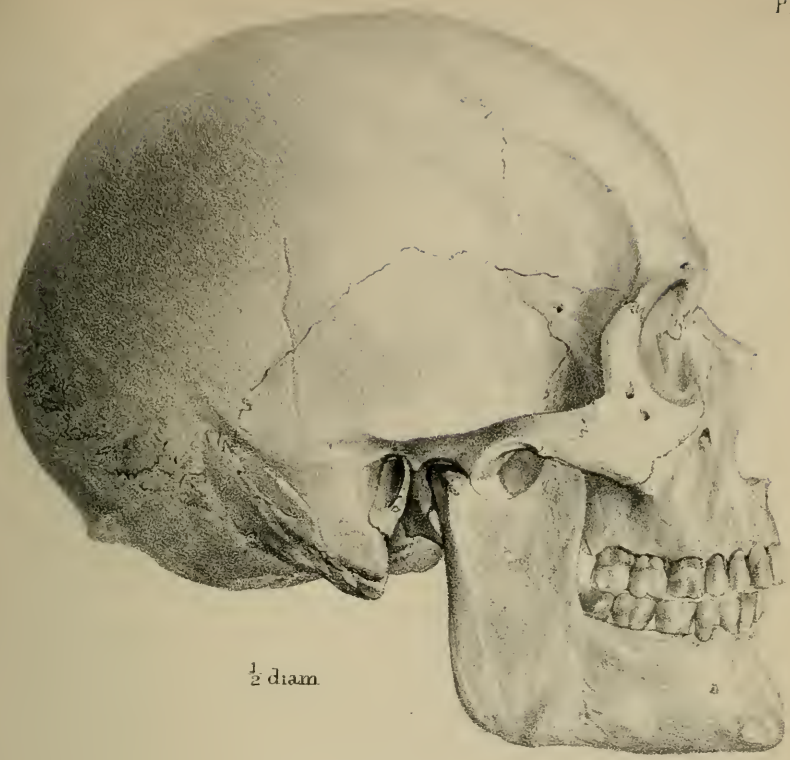
T. RICHARDS, 37, GREAT QUEEN STREET.



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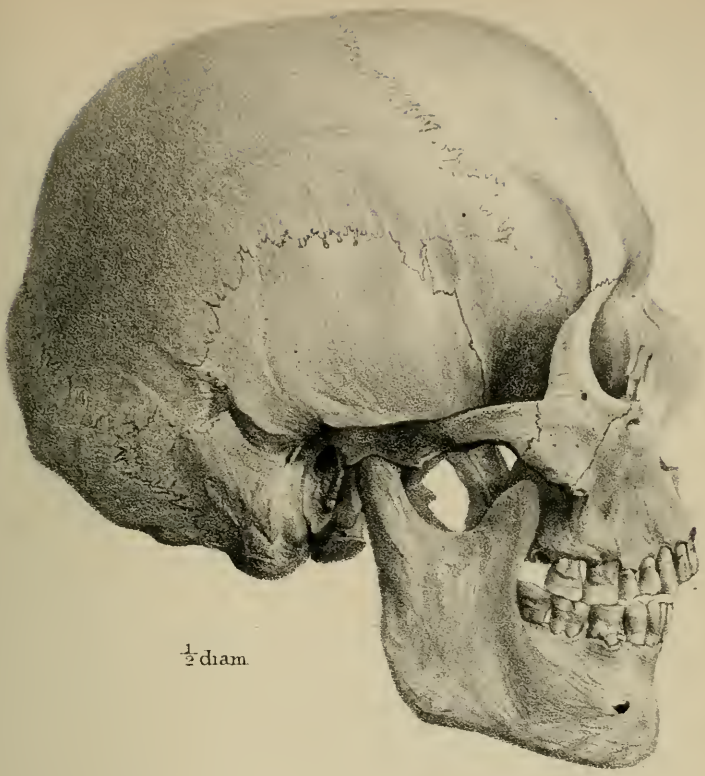

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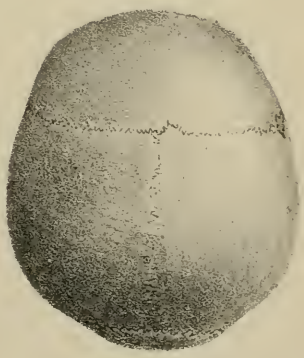

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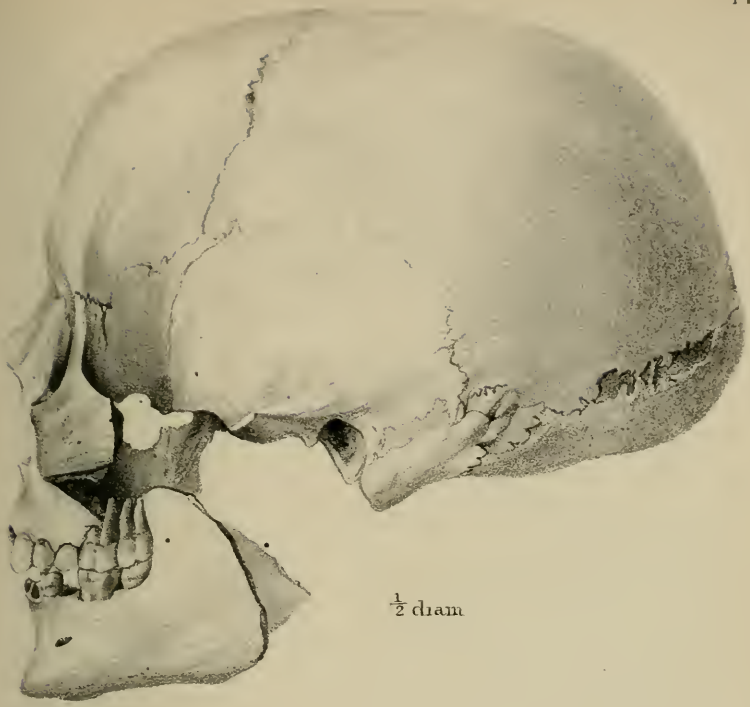

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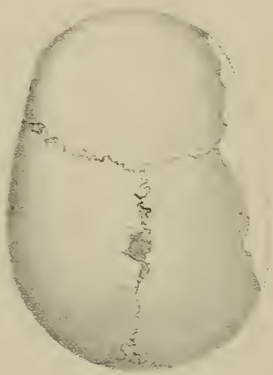

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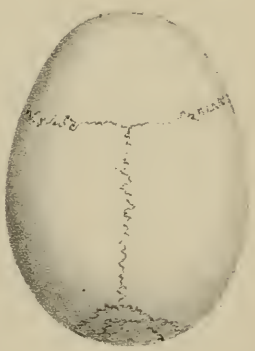

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ANCIENT GAULISH — GROTTE, NOGENT LES VIERGES. OISE

TABLE I.—MEASUREMENTS OF 50 ANCIENT BRITISH SKULLS, SUPPOSED TO BE OF MEN, 25 FROM LONG BARROWS AND 25 FROM ROUND BARROWS;—ARRANGED IN THE ORDER OF THE RELATIVE BREADTH.

B.—SKULLS FROM		13. Juniper Green, Lothian.	Pl. 18.	70	. .	20·5	. .	. .	. .	. .	. .	. .	. .
	III. BRACHYCEPHALI.	14. Green Lowe, Derbyshire.	Pl. 41.	35	107	21·5	7·5	6·2t	6·	4·7	. .	·82	·80
		15. Roundway, Wiltshire.	Pl. 43.	50	102	22·5	7·8	6·4p	5·3	5·6	5·7	·82	·68
		16. „ „	Pl. 42.	75	100	21·7	7·4	6·2p	5·7	4·7	5·3	·83	·77
		17. Wetton Hill, Staffordshire.	Pl. 12.	60	97	21·5	7·4	6·2p	5·5	4·8	5·4	·83	·74
		18. Codford, South Wiltshire.	Pl. 14.	40	82	20·	6·8	5·7p	5·1	4·4	5·3	·83	·75
		19. Stonehenge, „	98.	70	100	21·5	7·2	6·1t	5·8	. .	. .	·84	·80
		20. Lesmurdie, Banffshire.	Pl. 16.	60	. .	21·5	7·3	6·2t	5·2	4·4	. .	·85	·71
		21. Wetton Hill, Staffordshire.	Pl. 34.	40	. .	. .	7·	6·t	5·6	4·9	. .	·85	·80
		22. Gristhorpe, E. R. Yorkshire.	Pl. 52.	70	102	22·	7·4	6·3t	5·8	4·7	5·7	·85	·78
		23. Tosson, Northumberland.	Pl. 54.	70	103	21·2	7·1	6·1p	5·3	4·8	5·1	·85	·74
		24. Hitter Hill, Derbyshire.	Pl. 53.	70	100	20·4	6·8	5·9p	5·7	4·5	5·6	·86	·83
		25. Ulwell, Dorsetshire.	121.	70	. .	22·	7·4	6·5t	. .	. .	. .	·87	. .
		Averages in cubic & linear Inches English.			98	21·3	7·3	5·9	5·6	4·8	5·3	·81	·76
		Av. in cubic Centim. & linear Millimeters.			1605	541	185	149	142	122	134		

TABLE I.—MEASUREMENTS OF 50 ANCIENT BRITISH SKULLS, SUPPOSED TO BE OF MEN, 25 FROM LONG BARROWS AND 25 FROM ROUND BARROWS;—ARRANGED IN THE ORDER OF THE RELATIVE BREADTH.

		DERIVATION OF SKULLS.	Probable Age.	I. Cubic Capacity.	II. Circumference.	III. Length.	IV. Breadth.	V. Height.	VI. Face. Length.	VII. Face. Breadth.	A. Breadth : Length = 100.	B. Height : Length = 100.
		a. *Skulls from Long Barrows.*										
A.—SKULLS FROM LONG BARROWS.	I. DOLICHOCEPHALI.	1. West Kennet, North Wiltshire. Pl. 50.	35	92	21·2	7·7	5·2t	5·8	4·3	4·7	·67	·75
		2. Long Lowe, Staffordshire. Pl. 33.	40	102	21·5	7·9	5·4p	5·9	4·8	5·2	·68	·74
		3. Tilshead, South Wiltshire. 179.	40	95	21·7	8	5·5t	5·6	. .	. .	·68	·70
		4. Littleton Drew, North Wiltshire. 58.	50	90	21	7·6	5·2p	5·7	. .	. .	·68	·75
		5. " " 57.	55	92	21·1	7·7	5·4t	5·6	. .	. .	·70	·72
		6. Dinnington, W. R. Yorkshire. 188·1	30	110	21·8	8	5·6p	5·9	. .	5·2	·70	·73
		7. Tilshead, South Wiltshire. 181.	30	. .	. .	7·8	5·5p	5·7	. .	. .	·70	·73
		8. West Kennet, North Wiltshire. 137.	50	100	22·2	8	5·6t	5·7	. .	. .	·70	·71
		9. " " 138.	30	95	21·2	7·7	5·5p	5·5	4·4	4·7	·71	·71
		10. Uley, Gloucestershire. Pl. 5.	65	106	21·8	8	5·7p	5·5	4·3	5·2	·71	·68
		11. Rodmarton, Gloucestershire. 164.	50	112	21·9	8	5·7p	5·9	4·6	. .	·71	·73
	II. Sub-Dolichocephali.	12. Littleton Drew, North Wiltshire. Pl. 24.	45	93	21·8	7·7	5·6p	6	4·6	. .	·72	·78
		13. " " 60.	50	. .	. .	7·6	5·5p	5·5	. .	. .	·72	·72
		14. " " 61.	65	. .	. .	7·9	5·7p	. .	. .	. .	·72	
		15. Tilshead, South Wiltshire. 180.	55	. .	. .	7·5	5·4p	5·7	. .	. .	·72	·76
		16. Dinnington, W. R. Yorkshire. 2.	60	95	21·	7·5	5·4p	5·8	. .	5·4	·72	·77
		17. Rodmarton, Gloucestershire. Pl. 59.	50	109	22·	7·9	5·7p	5·5	4·5	5·2	·72	·69
		18. " " 163.	55	96	21·3	7·8	5·7t	5·6	4·4	5·4	·73	·71
		19. West Kennet, North Wiltshire. 136.	17	107	22·1	7·9	5·8p	5·5	. .	4·7	·73	·69
		20. Dinnington, W. R. Yorkshire. 3.	50	100	21·2	7·6	5·6p	6	. .	5·3	·73	·78
		21. Littleton Drew, North Wiltshire. 59.	15	. .	21·8	7·8	5·7p	. .	. .	. .	·74	
		22. Rodmarton, Gloucestershire. 166.	35	. .	22·2	7·8	5·8p	5·5	4·5	. .	·74	·70
		23. Nympsfield, " 150.	65	. .	21·8	7·7	5·7p	5·7	. .	. .	·74	·74
		24. " " 149.	55	107	21·9	7·7	5·8p	5·7	. .	5·2	·75	·74
		25. Winterbourn Stoke, S. Wilts. (A.) 159.	25	93	20·6	7·3	5·5p	5·7	4.5	5·1	·75	·78
		Averages in cubic & linear Inches English.		99	21·6	7·7	5·5	5·7	4·5	5·1	·71	·74
		Av. in cubic Centim. & linear Millimeters.		1622	548	195	139	144	114	129		
		b. *Skulls from Round Barrows.*										
B.—SKULLS FROM ROUND BARROWS.	III. BRACHYCEPHALI. Sub-Brachycephali. II. ORTHO.	1. Arras, E. R. Yorkshire. Pl. 6.	30	98	21·1	7·5	5·6p	6·	4·9	5·1	·74	·80
		2. Kennet Hill, North Wiltshire. 11.	60	101	21·7	7·7	5·7t	6·2	5·	5·2	·74	·80
		3. Acklam, E. R. Yorkshire. Pl. 31.	50	85	21·6	7·7	5·8p	5·7	4·9	5·2	·75	·74
		4. Morgan's Hill, Wiltshire. Pl. 32.	70	97	21·4	7·6	5·7p	5·7	5·2	5·4	·75	·75
		5. End Lowe, Derbyshire. Pl. 13.	40	. .	. .	7·2	5·6p	5·6	5·4	5·2	·77	·77
		6. Bincombe, Dorsetshire. Pl. 57.	65	. .	21·	7·2	5·6t	5·3	5·	5·2	·77	·73
		7. Stonehenge, South Wiltshire. 99.	60	. .	22·3	7·7	6·	5·6	. .	. .	·78	·72
		8. Hay Top, Derbyshire. Pl. 60.	60	109	21·8	7·4	5·9p	5·4	4·4	5·4	·79	·73
		9. Ballidon Moor, Derbyshire. Pl. 1.	45	90	20·5	7·	5·6t	5·9	4·4	5·6	·80	·84
		10. Wilsford, South Wiltshire. 97.	55	95	21·2	7·3	5·9p	5·5	. .	. .	·80	·75
		11. Parsley Hay, Derbyshire. Pl. 2.	55	88	21·2	7·4	6·p	5·6	4·7	5·4	·81	·75
		12. Green Gate Hill, N. R. Yorks. Pl. 3.	40	88	20·	6·9	5·6t	5·3	4·4	5·2	·81	·76
		13. Juniper Green, Lothian. Pl. 15.	50	. .	20·3	7·	5·8t	5·1	4·6	. .	·82	·72
		14. Green Lowe, Derbyshire. Pl. 41.	35	107	21·5	7·5	6·2t	6·	4·7	. .	·82	·80
		15. Roundway, Wiltshire. Pl. 43.	50	102	22·5	7·8	6·4p	5·3	5·6	5·7	·82	·68
		16. " " Pl. 42.	75	100	21·7	7·4	6·2p	5·7	4·7	5·3	·83	·77
		17. Wetton Hill, Staffordshire. Pl. 12.	60	97	21·5	7·4	6·2p	5·6	4·8	5·4	·83	·74
		18. Codford, South Wiltshire. Pl. 14.	40	82	20·	6·8	5·7p	5·1	4·4	5·3	·83	·75
		19. Stonehenge, " 98.	70	100	21·5	7·2	6·1t	5·8	. .	. .	·84	·80
		20. Lesmurdie, Banffshire. Pl. 16.	60	. .	21·5	7·3	6·2t	5·2	4·4	. .	·85	·71
		21. Wetton Hill, Staffordshire. Pl. 34.	40	. .	. .	7·	6·t	5·6	4·9	. .	·85	·80
		22. Gristhorpe, E. R. Yorkshire. Pl. 52.	70	102	22·	7·4	6·3t	5·8	4·7	5·7	·85	·78
		23. Tosson, Northumberland. Pl. 54.	70	103	21·2	7·1	6·1p	5·3	4·8	5·1	·85	·74
		24. Hitter Hill, Derbyshire. Pl. 53.	70	100	20·4	6·8	5·9p	5·7	4·5	5·6	·86	·83
		25. Ulwell, Dorsetshire. 121.	70	. .	22·	7·4	6·5t	. .	. .	. .	·87	. .
		Averages in cubic & linear Inches English.		98	21·3	7·3	5·9	5·6	4·8	5·3	·81	·76
		Av. in cubic Centim. & linear Millimeters.		1605	541	185	149	142	122	134		

TABLE II.—MEASUREMENTS OF 56 SKULLS FROM CHAMBERED AND OTHER LONG BARROWS; 35 SUPPOSED TO BE OF MEN, AND 21 OF WOMEN.

No.	DERIVATION OF SKULLS.	Probable Age.	I. Cubic capacity.	II. Circumference.	III. Length.	IV. Breadth.	V. Height.	VI. Face. Length.	VII. Face. Breadth.	A. Breadth: Length = 1·00.	B. Height: Length = 1·00.
6.	,, ,,	50									
7.	Charlton Abbots, Gloucestersh. B 2	50	. .	. .	7·4	5·3p	5	. .	. .	·71	·67
A.	,, ,, C 2	60	105	20·6	7·2	5 6p	5·6	4·3	5·2	·77	·77
8.	,, ,, C 6	30	86	20·1	7·2	5·1p	5·2	. .	. .	·70	·72
9.	,, ,, C 7	40	87	19·9	7·1	5·1p	5·4	. .	. .	·71	·76
10.	,, ,, C 8	60	. .	20	7·2	5·4p	5·6	. .	. .	·75	·77
11.	,, ,, C 9	20	. .	. .	7·5	5·3p	. .	. .	. .	·70	. .
12	,, ,, C 10	60	. .	20·6	7·5	5·1p	. .	. .	. .	·68	. .
13.	,, ,, D 4	7	. .	19·5	7·1	5·2p	4 8	. .	. .	·73	·67
14.	BRIGANTES. Dinnington, W. R. Yorkshire. 11	80	91	20·2	7·2	5·4p	5·7	. .	4·9	·75	·79
15.	,, ,, 12	40	. .	20	7·0	5·2p	5·8	. .	. .	·74	·82
16.	,, ,, 13	60	88	20·3	7·2	5·4p	5·3	. .	. .	·75	·73
17.	,, ,, 14	55	. .	20·1	7·4	5·3p	5·5	. .	. .	·71	·74
18.	,, ,, 15	15	. .	. .	7·4	5·4p	. .	. .	. .	·72	. .
19.	Ebberston, N. R. Yorkshire. 3	60	. .	21·4	8·3	4 7p	. .	. .	. .	·56	. .
20.	,, ,, 4	40	. .	. .	7·3	5·2p	. .	. .	. .	·71	. .
	Averages in cubic & linear Inches English.		90	20·4	7·3	5·2	5·3	4·3	4·9	·71	·72
	Aver. in cub. Centim. & linear Millimeters.		1474	518	185	132	134	109	124		

TABLE II.—MEASUREMENTS OF 56 SKULLS FROM CHAMBERED AND OTHER LONG BARROWS; 35 SUPPOSED TO BE OF MEN, AND 21 OF WOMEN.

No.	DERIVATION OF SKULLS.		Probable Age.	I. Cubic capacity.	II. Circumference.	III. Length.	IV. Breadth.	V. Height.	VI. Face. Length.	VII. Face. Breadth.	A. Breadth: Length =100.	B. Height: Length =100.
	a. Skulls supposed to be of Men.											
A.	BELGÆ.	Winterbourn Stoke, S. Wilts. A 159	25	93	20·6	7·3	5·5p	5·7	4·5	5·1	·75	·78
B.		" " B 160	60	99	22·	7	6·1t	5·4	5·2	5·5	·87	·77
C.		" " 161	7	. .	18·	6·4	5·2p	5·4	3·5	. .	·81	·84
1.		" " 162	1	. .	17·	5·7	4·6p	4·8	2·3	. .	·81	·84
2.		Tilshead, South Wiltshire. 179	45	95	21·7	8·0	5·5t	5·6	. .	. .	·68	·70
3.		" " 180	55	. .	. .	7·5	5·4p	5·7	. .	. .	·72	·76
4.		" " 181	30	. .	. .	7·8	5·5p	5·7	. .	. .	·70	·73
5.		Bowl's Barrow, South Wiltshire. 210	25	99	21·3	7·9	5·3p	5·5	4·4	4·9	·67	·69
6.		" " 211	35	105	21·2	7·7	5·4p	5·6	4·5	5·1	·70	·72
7.		" " 212	60	96	20·5	7·5	5·1p	5·8	. .	. .	·67	·75
8.		" " 213	50	. .	. .	8·1	5·2	6·1	. .	. .	·64	·75
9.	DOBUNI.	Oldbury, North Wiltshire. 198	50	94	20·6	7·6	5·2p	5·4	4·7	. .	·68	·71
D.		Charlton Abbots, Gloucestersh. A	18	106	20·6	7·2	5·7p	5·5	. .	. .	·79	·76
10.		" " B 1	55	108	21	7·8	5·5	5·5	. .	. .	·70	·70
11.		" " C 1	55	96	21·5	7·7	5.3p	5·7	4·3	5	·68	·74
12.		" " C 3	60	114	21·6	7·8	5·6p	5·6	. .	. .	·71	·71
13.		" " C 4	60	100	21·2	7·4	5·6p	5·5	. .	. .	·75	·74
14.		" " C 5	65	. .	21·8	8	5·8t	5·7	. .	. .	·72	·71
15.		" " C 11	60	. .	. .	7·6	5·5p	. .	. .	. .	·72	. .
16.		" " D 1	20	. .	20·4	7·4	5·4 t	5·6	4·1	. .	·72	·75
17.		" " D 2	30	86	20·3	7·4	5·3p	5·4	. .	. .	·71	·72
18.		" " D 3	25	. .	20·2	7·3	5·p	5.7	. .	. .	·68	·78
19.	BRIGANTES.	Diuniugton, W. R. Yorkshire. 188. 1	30	110	21·8	8·0	5·6p	5·9	. .	5·2	·70	·74
20.		" " 2	60	95	21	7·5	5·4p	5·8	. .	5·4	·72	·77
21.		" " 3	50	100	21·2	7·6	5·6p	6·0	. .	5·3	·73	·78
22.		" " 4	70	108	21·7	7·8	5·6p	5·7	. .	5·3	·71	·73
23.		" " 5	75	101	20·9	7·4	5·5p	5·6	. .	5·2	·74	·75
24.		" " 6	21	96	21	7·5	5·6p	5·5	. .	5·1	·74	·73
25.		" " 7	40	83	20·5	7·5	5·2p	5·4	. .	. .	·69	·72
26.		" " 8	25	. .	20·6	7·6	5·2p	. .	. .	. .	·68	. .
27.		" " 9	20	. .	21·2	7·8	5·4p	6·0	. .	. .	·69	·76
28.		" " 10	18	. .	. .	7·1	5·2p	5·9	. .	4·9	·73	·83
E.		Ebberstou, N. R. Yorkshire. 1	65	88	20·6	7·1	5·75p	5·5	. .	. .	·80	·77
29.		" " 2	60	83	20·3	7·3	5·2p	5·1	. .	. .	·71	·69
30.		" " 5	20	. .	20·7	7·7	5·2p	5·5	. .	. .	·67	·71
	Averages in cubic & linear Inches English.			98	21	7·6	5·3	5·6	4·4	5·1	·70	·73
	Aver. in cub. Centim. & linear Millimeters.			1605	533	193	134	142	111	129		
	b. Skulls supposed to be of Women.											
1.	DOBUNI.	Littleton Drew, North Wiltshire 64	17	88	21	7·7	5·4p	5·5	. .	. .	·70	·71
2.		Rodmarton, Gloucestershire 165	40	89	20·6	7·4	5·5p	5·5	4 1	4·9	·74	·74
3.	BELGÆ.	Tilshead, South Wiltshire 182	30	. .	21·8	7·7	5·7p	5·0	4·5	. .	·74	·65
4.		" " 183	20	. .	. .	7·1	5·3p	4·9	. .	. .	·74	·69
5.	DOBUNI.	Oldbury, North Wiltshire.	60	. .	20·8	7·5	5·6p	5·2	. .	. .	·74	·69
6.		" "	50	. .	. .	7·4	5·3p	5	. .	. .	·71	·67
7.		Charlton Abbots, Gloucestersh. B 2	50	86	20·6	7·4	5·1	5·5	. .	. .	·68	·74
4.		" " C 2	60	105	20·6	7·2	5·6p	5·6	4·3	5·2	·77	·77
8.		" " C 6	30	86	20·1	7·2	5·1p	5·2	. .	. .	·70	·72
9.		" " C 7	40	87	19·9	7·1	5·1p	5·4	. .	. .	·71	·76
10.		" " C 8	60	. .	20	7·2	5·4p	5·6	. .	. .	·75	·77
11.		" " C 9	20	. .	. .	7·5	5·3p	. .	. .	. .	·70	. .
12		" " C 10	60	. .	20·6	7·5	5·1p	. .	. .	. .	·68	. .
13.		" " D 4	7	. .	19·5	7·1	5·2p	4·8	. .	. .	·73	·67
14.	BRIGANTES.	Diuniugton, W. R. Yorkshire. 11	80	91	20·2	7·2	5·4p	5·7	. .	4·9	·75	·79
15.		" " 12	40	. .	20	7·0	5·2p	5·8	. .	. .	·74	·82
16.		" " 13	60	88	20·3	7·2	5·4p	5·3	. .	. .	·75	·73
17.		" " 14	55	. .	20·1	7·4	5·3p	5·5	. .	. .	·71	·74
18.		" " 15	15	. .	. .	7·4	5·4p	. .	. .	. .	·72	. .
19.		Ebberston, N. R. Yorkshire. 3	60	. .	21·4	8·3	4 7p	. .	. .	. .	·56	. .
20.		" " 4	40	. .	. .	7·3	5·2p	. .	. .	. .	·71	. .
	Averages in cubic & linear Inches English.			90	20·4	7·3	5·2	5·3	4·3	4·9	·71	·72
	Aver. in cub. Centim. & linear Millimeters.			1474	518	185	132	134	109	124		

TABLE III.—MEASUREMENTS OF 61 ANCIENT GAULISH SKULLS; 36 SUPPOSED TO BE OF MEN, AND 25 OF WOMEN.

No.	DERIVATION OF SKULLS.			Probable Age.	I. Cubic Capacity.	II. Circumference.	III. Length.	IV. Breadth.	V. Height.	VI. Face. Length.	VII. Face. Breadth.	A. Breadth: Length = 1·00.	B. Height: Length = 1·00.
	a. *Skulls supposed to be of Men.*												
1	AMBIANI.	Noyelles sur Mer, Somme.	317	. .	. .	20·3	6·9	5·6*p*	5·5	. .	. .	·81	·79
2	BELLOVACI.	Nogent les Vièrges, Oise.	343[1]	45	. .	21	7·2	5·8*p*	5·5	5	5·4	·80	·76
3		,, ,,	344[2]	40	. .	20·1	7·3	5·2*p*	5·2	4·6	5	·71	·71
4		,, ,,	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	5·4	. .	. .	·72	·75
10		,, ,,	170*b*	. .	. .	21	7·5	5·7	5·5	. .	. .	·76	·73
11		Chamant, Senlis, Oise.	I.	45	. .	20	7	5·5	5·3	4·2	4·6	·78	·75
12	SUESSIONES.	Orrouy, Oise.	IV.	45	77	19·1	6·6	5·25*p*	5·1	. .	4·7	·79	·77
13		,, ,,	V.	40	85	20·1	7·2	5·15*p*	5·3	. .	. .	·71	·73
14		,, ,,	VI.	50	85	20·1	7·15	5·1*p*	5·4	. .	4·8	·71	·75
15		,, ,,	VII.	20	. .	19·7	6·8	5·5	5·4	. .	. .	·80	·79
16		,, ,,	X.	40	83	19·6	6·9	5·5*p*	5	. .	. .	·79	·72
17		,, ,,	XV.	25	. .	19·5	6·5	5·6	4·9	. .	. .	·86	·75
18	PARISII.	Meudon, Seine et Oise.	356	35	. .	20·3	7·2	5·3*p*	5·2	4·6	5	·73	·72
19		,, ,,	175	. .	. .	20	6·9	5·3	5·2	. .	. .	·76	·75
20		Bellevue. ,,	199	30	. .	19·8	6·9	5·2*p*	5·2	4·4	5·2	·75	. .
21		Marly le Roi ,,	375	. .	. .	20·4	6·9	5·8*p*	5·6	. .	. .	·84	. .
22	VIDUCASSES.	Fontenay le Marmion, Calvados	2988	65	. .	20·7	7·4	5·7*p*	5·5	. .	. .	·77	·74
23	PICTAVI.	Bougon, Deux Sèvres.	336	. .	. .	20·6	7·2	5·3*p*	. .	. .	. .	·73	. .
24	CONSORANI.	Lombrive, Ariège		30	. .	20	6·8	5·3*p*	5·5	. .	5	·78	·80
25	HELVETII.	Genthod, Geneva.	2303	50	. .	20·6	7·5	5·4*p*	5·4	4·2	. .	·72	·72
	Averages in Cubic & Linear Inches English.				82·5	20·1	7·1	5·35	5·3	4·2	4·8	·75	·74
	Averages in C. Centim. & Linear Millimeters.				1351	510	180	136	134	106	122		

TABLE III.—MEASUREMENTS OF 61 ANCIENT GAULISH SKULLS; 36 SUPPOSED TO BE OF MEN, AND 25 OF WOMEN.

No.	DERIVATION OF SKULLS.		Probable Age.	I. Cubic Capacity.	II. Circumference.	III. Length.	IV. Breadth.	V. Height.	VI. Face. Length.	VII. Face. Breadth.	A. Breadth : Length = 1·00.	B. Height : Length = 1·00.
	a. Skulls supposed to be of Men.											
1	AMBIANI.	Noyelles sur Mer, Somme.	317	. .	. .	20·3	6·9	5·6*p*	5·5	. .	. .	·81	·79
2	BELLOVACI.	Nogent les Vièrges, Oise.	343[1]	45	. .	21	7·2	5·8*p*	5·5	5	5·4	·80	·76
3		,, ,,	344[2]	40	. .	20·1	7·3	5·2*p*	5·2	4·6	5	·71	·71
4		,, ,,	345[3]	40	. .	20·8	7·1	5·7*p*	5·2	4·6	5	·80	·73
5		,, ,,	346[4]	25	. .	20·9	6·9	5·9*p*	5·5	4·6	5	·85	·79
6		,, ,,	348[6]	60	. .	20·6	7·3	5·4*p*	5·5	4·5	5·2	·74	·75
7		,, ,,	353[10]	60	. .	20·8	7·4	5·2*p*	5·6	4·2	4·7	·70	·75
8	SILVANECTES.	Du Val, Senlis, Oise.	166	40	. .	19·7	6·6	5·6*p*	5·4	4·5	5·2	·84	·81
9		,, ,,	167	80	. .	20·2	7·1	5·5*p*	5·6	. .	5·4	·77	·78
10		,, ,,	169	45	. .	20·8	7·2	5·5	5·8	. .	. .	·76	·80
11		,, ,,	170 *d*	35	. .	. .	7·2	5·8	. .	. .	. .	·80	. .
12		Chamant, Senlis, Oise.	II.	55	. .	. .	7·4	5·3	. .	. .	. .	·71	. .
13		,, ,,	III.	45	. .	. .	7·1	5·5	. .	. .	. .	·78	. .
14		,, ,,	IV.	40	. .	. .	7·4	5·5	5·4	. .	. .	·74	·72
15	SUESSIONES.	Orrouy, Oise.	I.	35	. .	21·2	7·4	5·8	5·3	4·5	. .	·78	·72
16		,, ,,	II.	35	. .	. .	7·1	5·5 *p*	5·3	4·4	. .	·77	·74
17		,, ,,	III.	30	99	20·1	7·2	5·4*p*	5·7	. .	. .	·75	·81
18		,, ,,	VIII.	40	103	20·7	7·1	5·9*p*	5·6	. .	. .	·83	·78
19		,, ,,	IX.	70	81	19·2	6·7	5·5*p*	5·4	. .	. .	·82	·80
20		,, ,,	XI.	50	88	19·9	6·6	5·65*p*	5·5	. .	5·1	·85	·83
21		,, ,,	XII.	35	96	20·9	7·2	5·9	5·4	. .	. .	·81	·75
22		,, ,,	XIII.	45	. .	20·4	6·8	5·75	5·1	. .	. .	·84	·75
23		,, ,,	XIV.	70	. .	. .	7·4	5·8	5·7	. .	. .	·78	·77
24		,, ,,	XVI.	55	. .	20·8	7·2	5·9	. .	. .	. .	·81	. .
25	PARISII.	Meudon, Seine et Oise.	357	45	93	20·7	7	5·95*p*	5·9	4·8	5·5	·85	·84
26		,, ,,	174	. .	. .	20·8	7·2	5·7	5·5	. .	5	·79	·76
27		Lozerres ,,	390	55	. .	21	7·3	5·8*p*	5·7	4·2	5·4	·79	·78
28	CARNUTES.	Maintenon, Eure et Loire.	I.	. .	. .	20·3	7·25	5·5	. .	. .	. .	·75	. .
29		,, ,,	II.	. .	. .	20·8	7·7	5·5	. .	. .	. .	·71	. .
30	PICTAVI.	Bougon, Deux Sèvres.	209	. .	. .	20	6·7	5·4*p*	. .	. .	. .	·80	. .
31	ÆDUI.	Meloisy, Côte d'Or.		. .	. .	20·9	7·3	5·5	. .	. .	. .	·75	. .
32	CAVARES.	Avignon (*l*) Vaueluse.	173	. .	. .	20·7	6·9	5·8	. .	4·7	. .	·84	. .
33		,, ,,	174	. .	. .	21·8	7·8	5·5*p*	. .	. .	. .	·70	. .
34	CONSORANI.	Lombrive, Ariège.	9	. .	. .	19·2	6·7	5·5	5·5	. .	4·3	·82	·82
35	HELVETII.	Genthod, Geneva.	2301	60	. .	21·1	7·4	5·6*p*	5·5	4·5	5·5	·75	·74
36		,, ,,	2305	50	. .	20·5	6·9	5·6*p*	5·4	4·6	5·5	·81	·78
	Averages in Cubic & Linear Inches English.				93·3	20·5	7·1	5·6	5·5	4·5	5·1	·78	·77
	Averages in C. Centim. & Linear Millimeters.				1528	520	180	142	139	114	129		
	b. Skulls supposed to be of Women.												
1	AMBIANI.	Noyelles sur Mer, Somme.	209	. .	. .	21·1	7·7	5·6	5·4	. .	. .	·72	·70
2		,, ,,	314	. .	. .	. .	7·4	5·4	. .	. .	. .	·73	. .
3	BELLOVACI.	Nogent les Vièrges, Oise.	347[5]	30	. .	20·6	7·3	5·3*p*	5·5	4·2	5	·72	·75
4		,, ,,	349[7]	20	. .	20	7·2	5·0*p*	5·4	4	4·7	·69	·75
5		,, ,,	350[8]	25	. .	20·1	7·1	5·2*p*	5·4	4·2	4·4	·73	·76
6		,, ,,	351[9]	35	. .	20·1	7·2	5·2*p*	5·3	. .	4·9	·72	·73
7		,, ,,	352[10]	20	. .	19·8	7	5·1*p*	5·5	4	4·5	·72	·78
8	SILVANECTES.	Du Val, Senlis, Oise.	165	15	. .	20·3	6·9	5·7*p*	4·9	. .	. .	·82	·71
9		,, ,,	168	18	. .	19·6	7·2	5·2*p*	5·4	. .	. .	·72	·75
10		,, ,,	170 *b*	. .	. .	21	7·5	5·7	5·5	. .	. .	·76	·73
11		Chamant, Senlis, Oise.	I.	45	. .	20	7	5·5	5·3	4·2	4·6	·78	·75
12	SUESSIONES.	Orrouy, Oise.	IV.	45	77	19·1	6·6	5·25*p*	5·1	. .	4·7	·79	·77
13		,, ,,	V.	40	85	20·1	7·2	5·15*p*	5·3	. .	. .	·71	·73
14		,, ,,	VI.	50	85	20·1	7·15	5·1*p*	5·4	. .	4·8	·71	·75
15		,, ,,	VII.	20	. .	19·7	6·8	5·5	5·4	. .	. .	·80	·79
16		,, ,,	X.	40	83	19·6	6·9	5·5*p*	5	. .	. .	·79	·72
17		,, ,,	XV.	25	. .	19·5	6·5	5·6	4·9	. .	. .	·86	·75
18	PARISII.	Meudon, Seine et Oise.	356	35	. .	20·3	7·2	5·3*p*	5·2	4·6	5	·73	·72
19		,, ,,	175	. .	. .	20	6·9	5·3	5·2	. .	. .	·76	·75
20		Bellevue. ,,	199	30	. .	19·8	6·9	5·2*p*	5·2	4·4	5·2	·75	. .
21		Marly le Roi .,	375	. .	. .	20·4	6·9	5·8*p*	5·6	. .	. .	·84	. .
22	VIDUCASSES.	Fontenay le Marmion, Calvados	2988	65	. .	20·7	7·4	5·7*p*	5·5	. .	. .	·77	·74
23	PICTAVI.	Bougon, Deux Sèvres.	336	. .	. .	20·6	7·2	5·3*p*	. .	. .	. .	·73	. .
24	CONSORANI.	Lombrive, Ariège		30	. .	20	6·8	5·3*p*	5·5	. .	5	·78	·80
25	HELVETII.	Genthod, Geneva.	2303	50	. .	20·6	7·5	5·4*p*	5·4	4·2	. .	·72	·72
	Averages in Cubic & Linear Inches English.				82·5	20·1	7·1	5·35	5·3	4·2	4·8	·75	·74
	Averages in C. Centim. & Linear Millimeters.				1351	510	180	136	134	106	122		

Averages in Inches English.		. .	20·	6·9	5·5	5·4	4·35	4·95	·79	·78
Averages in Millimeters.		. .	508	175	139	137	110	125		

TABLE IV.—MEASUREMENTS OF 28 SKULLS FROM CHAMBERED LONG BARROWS, IN THE ISLANDS OF FALSTER AND MÖEN, DENMARK.

No.	DERIVATION OF SKULLS.	Probable Age.	I. Cubic Capacity.	II. Circumference.	III. Length.	IV. Breadth.	V. Height.	VI. Face. Length.	VII. Face. Breadth.	A. Breadth : Length = 1·00.	B. Height : Length = 1·00.
	a. Skulls supposed to be of Men.										
1.	Borreby, Falster, Denmark. 18519. I.	60	. .	20·4	7	5·5*t*	5·6	4·7	5·1	·78	·80
2.	" " " II.	60	. .	21·3	7·3	5·8*p*	6	5·	5·3	·79	·82
3.	" " " III.	70	. .	21·5	7·4	6·1*t*	5·5	4·8	. .	·82	·74
4.	" " " IV.	65	. .	21·6	7·6	5·9*p*	5·8	4·4	5·5	·77	·76
5.	" " " V.	45	. .	21	7·1	6·*p*	6	4·6	5·6	·84	·84
6.	" " " VII.	55	. .	20·6	7·2	5·7*t*	5·9	4·7	5·2	·79	·81
7.	" " " VIII.	45	. .	21	7·1	5·9*p*	6·1	4·7	5·8	·83	·85
8.	" " " IX.	65	. .	20·5	7·1	5·7*t*	5·6	4·8	5·4	·80	·77
9.	" " " X.	50	. .	21·7	7·5	6·2*t*	5·9	4·7	. .	·82	·78
10.	" " " XII.	45	. .	20·7	7·1	5·5*p*	5·7	. .	. .	·77	·80
11.	" " " XIV.	70	. .	20·8	7·1	5·2*p*	5·7	. .	. .	·73	·80
12.	" " " XVII.	20	. .	20·	6·8	5·7*p*	5·2	4·3	. .	·83	·76
13.	" " " XXII.	70	. .	21·5	7·7	5·6*t*	5·5	. .	. .	·72	·71
14.	Udby, Möen, Denmark. 1469.	50	. .	20·1	6·9	5·6*t*	5·5	. .	5·4	·81	·71
15.	" " 1469.	60	. .	20·9	7·4	5·5*p*	5.7	4·7	5·3	·74	·77
16.	Byen, Möen, Denmark. 1.	30	. .	19·1	6·7	5·1*t*	5·5	. .	5	·76	·82
17.	" " 2.	. .	. .	19·5	6·6	5·5*p*	. .	. .	. .	·83	. .
18.	" " 3.	. .	. .	20·6	7·2	5·6*t*	. .	. .	. .	·77	. .
19.	" " 4.	. .	. .	21·8	7·7	5·9*p*	. .	. .	. .	·76	. .
20.	Magleby, Möen, Denmark.	. .	. .	20·1	6·9	5·7	5·7	. .	. .	·82	·82
	Averages in Inches English.		. .	20·7	7·1	5·7	5·7	4·65	5·36	·79	·78
	Averages in Millimeters.		. .	525	180	144	144	118	136		
	b. Skulls supposed to be of Women.										
1.	Borreby, Falster, Denmark. 18519. XI.	20	. .	20·3	6·9	5·8*p*	5·5	4·3	5·0	·84	·79
2.	" " " XIII.	18	. .	20·2	7·1	5·4*p*	5·5	. .	. .	·76	·77
3.	" " " XV.	60	. .	20·5	7·2	5·6*p*	. .	. .	. .	·78	. .
4.	" " " XVI.	60	. .	19·5	6·8	5·4*p*	5·2	4·4	4·9	·79	·76
5.	" " " XVIII.	. .	. .	20·2	6·9	5·7*p*	5·4	. .	. .	.82	·78
6.	" " " XXI.	70	. .	19·8	7·1	5·2*p*	5·5	. .	. .	·73	·80
7.	Udby, Möen, Denmark. 1469.	. .	. .	19·8	6·7	5·5	5·3	. .	. .	·82	·79
8.	Byen, Möen, Denmark. 5.	. .	. .	19·8	6·7	5·7*p*	. .	. .	. .	·85	. .
	Averages in Inches English.		. .	20·	6·9	5·5	5·4	4·35	4·95	·79	·78
	Averages in Millimeters.		. .	508	175	139	137	110	125		

Anthropological Society of London,

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THIS SOCIETY is formed with the object of promoting the study of Anthropology in a strictly scientific manner. It proposes to study Man in all his leading aspects, physical, mental, and historical; to investigate the laws of his origin and progress; to ascertain his place in nature and his relations to the inferior forms of life; and to attain these objects by patient investigation, careful induction, and the encouragement of all researches tending to establish a *de facto* science of man. No Society existing in this country has proposed to itself these aims, and the establishment of this Society, therefore, is an effort to meet an obvious want of the times.

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First. By holding Meetings for the reading of papers and the discussion of various anthropological questions.

Second. By the publication of reports of papers and abstracts of discussions in the form of a Quarterly Journal; and also by the publication of the principal memoirs read before the Society, in the form of Transactions.

Third. By the appointment of Officers, or Local Secretaries, in different parts of the world, to collect systematic information. It will be the object of the Society to indicate the class of facts required, and thus tend to give a systematic development to Anthropology.

Fourth. By the establishment of a carefully collected and reliable Museum, and a good reference Library.

Fifth. By the publication of a series of works on Anthropology which will tend to promote the objects of the Society. These works will generally be translations; but original works will also be admissible.

Translations of the following works are now ready. The following work was issued for 1863.

Dr. Theodor Waitz. Anthropology of Primitive Peoples. First Part. Edited from the German by J. Frederick Collingwood, Esq., F.R.S.L., F.G.S., V.P. A.S.L., with Corrections and Additions by the Author. Price 16s.

The following works were issued in 1864.

Broca, Dr. Paul. On the Phenomena of Hybridity in the Genus Homo. Edited from the French by C. Carter Blake, Esq., F.G.S., F. and Assistant Secretary A.S.L. Price 5s.

Pouchet, Georges. On the Plurality of the Human Race. Edited from the French (Second Edition), by H. J. C. Beavan, Esq., F.R.G.S., F.A.S.L. Price 7s. 6d.

Carl Vogt. Lectures on Man: his Place in Creation and in the History of the Earth. Edited by Dr. James Hunt, F.S.A., F.R.S.L., Pres. A.S.L. Price 16s.

The following is issued as the first volume for 1865.

Blumenbach, J. F., The Life and Anthropological Treatises of; with the Inaugural Dissertation of Dr. John Hunter. By T. Bendyshe, Esq., M.A., V.P. A.S.L., Fellow of King's College, Cambridge. Price 16s.

The publication of the following works is contemplated :—

Gastaldi, Cavaliere Bartolomeo. New Notes on Objects of High Antiquity found in the Turbaries and Marl Beds of Italy. Translated from the Italian by Charles Harcourt Chambers, M.A., F.A.S.L.

Retzius, Professor. The Anthropological Works of. Edited by A. Higgins, Esq., Hon. For. Sec. A.S.L.

Gratiolet. Mémoire sur les Plis Cérébraux de l'Homme et des Primates. 4to, Paris, 1855. Edited by Dr. Daniel H. Tuke.

Dr. Theodor Waitz, Professor of Philosophy in the University of Marburg. Anthropologie der Naturvölker. 1861. Second part. Edited by J. Frederick Collingwood, Esq., F.G.S., F.R.S.L., V.P. A.S.L.

A. de Quatrefages. Unité de l'Espèce Humaine. Edited by G. F. Rolph, Esq., F.A.S.L. 8vo. Paris, 1861.

The Anthropological Papers contained in the Comptes Rendus des Séances de l'Académie des Sciences. Edited by George E. Roberts, Esq., F.G.S., F.A.S.L.

Von Baer, Karl Ernst, The Anthropological Works of.

Gosse. Mémoire sur les Déformations Artificielles du Crâne. 8vo. Paris, 1855.

Bory de Saint Vincent. Essai zoologique sur le genre humain. 2 vols. Paris, 3rd ed., 1836. Edited by S. E. Bouverie-Pusey, Esq., F.A.S.L., F.E.S.

Crull. Dissertatio anthropologico-medica de Cranio, ejusque ad faciem ratione. 8vo. Gröningen, 1810.

Lucas, Dr. Prosper. Traité sur l'hérédité. 2 vols.

An Encyclopædia of Anthropological Science. Edited by T. Bendyshe, Esq., M.A., V.P. A.S.L., and other Contributors.

Gobineau. De l'Inégalité des Races Humaines.

Sixth. By the appointment, from time to time, of various Committees authorised to report to the Society on particular topics which may be referred to them; the results of such investigations being in all cases communicated to the Society.

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Further particulars will be forwarded on application to the Honorary Secretaries.

The following papers have been laid before the Society in the Session 1864-5.

C. Carter Blake, Esq., F.G.S. Report on the Anthropological Papers read at the Bath Meeting of the British Association.

*Captain Burton, V.P.A.S.L. Notes on Certain Facts connected with the Dahomans.

*W. T. Pritchard, Esq., F.R.G.S., F.A.S.L., On Viti and its Inhabitants.

*W. Bollaert, Esq., On the Astronomy of the Red Man of the New World.

*Dr. Barnard Davis, F.S.A. The Neanderthal Skull; its peculiar formation considered anatomically.

Samuel Laing, Esq., F.G.S., On the Prehistoric Remains of Caithness.

*George E. Roberts, Esq., F.G.S., Hon. Sec. A.S.L., On the Discovery of large Kistvaens in the Mückle Heog, in the island of Unst, Shetland, containing Urns of Chloritic Schist; with notes upon the Human Remains by C. Carter Blake, Esq., F.G.S.

George E. Roberts, Esq., F.G.S., Hon. Sec. A.S.L., On Prehistoric Hut Circles.

Dr. Henry Bird, On Remains from the British Tumuli at Cheltenham.

*E. Sellon, Esq. On the Linga Puja, or Phallic Worship of India.

*W. T. Pritchard, Esq., F.R.G.S., F.A.S.L., Notes on Certain Anthropological Matters connected with the South Sea Islanders.

Edward Lund, Esq., F.R.C.S.E. (communicated by Dr. F. Royston Fairbank, F.A.S.L.), On the Discovery of Syphilis in a Monkey *(Macacus Sinicus)*.

*G. D. Gibb, Esq., M.D., LL.D., F.G.S., On the Essential Points of Difference between the Larynx of the Negro and that of the White Man.

*T. B. Peacock, Esq., M.D., F.R.C.P., On the Weight of the Brain and Capacity of the Cranial Cavity of a Negro.

T. B. Peacock, Esq., M.D., F.R.C.P. On a Skull exhumed in Bedfordshire.

*T. Bendyshe, Esq., M.A., V.P.A.S.L., On the History of Anthropology.

K. R. H. Mackenzie, Esq., F.S.A. Notes on Fetish Worship in Egypt.

Dr. John Shortt. An Account of some rude Tribes, the supposed Aborigines of Southern India.

Dr. John Shortt. On the Leaf-wearing Tribes of India.

M. Arminius Vambéry (translated by Dr. Berthold Seemann, V.P.A.S.L.), On the Hadgis and Dervishes of Central Asia.

J. Hutchinson, Esq., On some Human Remains from Cowley.

W. T. Pritchard, Esq., F.R.G.S., F.A.S.L., On the Physical and Psychological Characters of the Viti Islanders.

John Anderson, Esq. (communicated by Geo. E. Roberts, Esq., F.G.S., Hon. Sec. A.S.L.) On Further Remains from Keiss, near Wick; with a Note on the Human Skull, by C. Carter Blake, Esq., F.G.S.

*T. Bendyshe, Esq., M.A., V.P.A.S.L., On the Anthropology of Linnæus.

W. Winwood Reade, Esq., F.R.G.S., F.A.S.L., On Missionary Efforts amongst Savages.

The following papers, amongst others, will be read during the present Session.

The Right Rev. the Lord Bishop of Natal, On Missionary Efforts amongst Savages.

*H. J. C. Beavan, Esq., F.R.G.S., F.A.S.L., Notes on the people inhabiting Spain.

W. Bollaert, Esq., Hon. Sec. A.S.L., On the Maya Alphabet.

Berthold Seemann, Esq., Ph.D., V.P.A.S.L., On the Indians of San Blas, Panamá.

*John Beddoe, Esq., M.D., F.A.S.L., On the Evidence of Phenomena in the West of England to the Permanence of Ethnological Types.

H. G. Atkinson, Esq., F.G.S., On the Idiotic Family of Downham, Norfolk.

Colonel Beauchamp Walker, and Lieut. Ardagh, R.E. On the Discovery of a Kjökkenmödding at Newhaven; with Notes on the Animal Remains, by C. Carter Blake, Esq., F.G.S. (communicated by Professor R. Owen, F.R.S., Hon. F.A.S.L.)

Hyde Clarke, Esq., LL.D. On Moravian Wallachia.

H. G. Atkinson, Esq., F.G.S., On Two Australian Skulls.

G. Krefft, Esq. On Australian Skulls.

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